

United States
Circuit Court of Appeals

For the Ninth Circuit. ✓

LYDELL PECK and ALLAN B. RUDDLE,

Appellants,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,

Appellees.

Transcript of Record

In Four Volumes

VOLUME II

Pages 497 to 995

Upon Appeal from the District Court of the United States
for the Northern District of California,
Southern Division

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(Testimony of Allan B. Ruddie.)

Mr. Hackley: Q. Yesterday you were shown Defendants' Exhibit Y and stated so far as you knew you had never seen that letter before, or at least any copy of that letter before, original or otherwise. This morning counsel for the defendants presented a letter, Exhibit Y-1, dated the following day. I want you to examine that letter and ask if you have seen either the original or a copy of that letter prior to the observation of this copy here, so far as you can recall?

A. I might have, but I don't recall now that I did.

Q. The general substance of the letter seems familiar, but you do not remember the document, is that correct?

A. That is right. [238]

Q. You mentioned the fact that you obtained certain Government pamphlets from the Department of Commerce, and those were handed to Mr. Waller?

A. Yes.

Q. Did they describe the core oil market generally?

A. Yes; it was on the amount of iron that was poured in the United States, and also the amount of oils, as I recall it.

Q. By "oil," you mean core oil?

A. Yes.

Q. Can you identify those pamphlets in any way for the record?

A. Only that they were gotten out by the Department of Commerce, I think, and they were printed—little printed forms.

Q. Do you remember the name of it, either?

(Testimony of Allan B. Ruddle.)

A. No, I wouldn't recall.

Q. About what date was that you gave these to Mr. Waller?

A. I wouldn't recall the date. I know we gave him that together with that Foundry letter that we referred to. He returned them later, in an envelope of the Shell—mailed them to us.

Q. How much of your personal time did you devote to the Core-Min-Oil project between the time you first took it to Shell and the time you received Mr. McLaren's letter, Exhibit 10, on or about July 26, 1939?

A. Well, the early part of it, I devoted most of my time to it—in fact, I was always ready to go to the Shell whenever they wanted me.

Q. You were on call for Shell, were you?

A. Yes, at all times.

Q. What do you mean by the early part of the time?

A. Well, when Mr. Waller left I only went to see Mr. McSwain; I would only go fewer times to the Vulcan Foundry in Martinez with Mr. McSwain.

Q. But you continued on call during the entire year and a half, is that correct?

A. During that time—I don't know—I spent [239] an awful lot of time on it; I don't know how much.

Q. Yesterday, in referring to the number of indirect fire ovens in the United States in comparison with direct fire ovens, on your cross ex-

(Testimony of Allan B. Ruddle.)

amination, you said that the amount was small compared with the direct fire ovens. What did you mean by "small"?

A. Well, as I understand, there is about five percent of the foundry business, the total foundry business, on this Coast, and in the East there are a number of large foundries that have electric ovens. So my estimate would be ten percent of the market in electric ovens, in indirect fire ovens.

Q. You spoke of the fact on cross examination yesterday that the Core-Min-Oil core sand, prior to the core making, tended to dry on the bench. You used the word "rapidly," or some such phrase, in referring to the drying of that product on the bench. Will you tell us what you mean, in number of minutes or hours, whatever it may be, what you meant by "rapidly"?

A. Well, at the Macauley Foundry we would make up an amount of Core-Min-Oil with sand, and if we did not put wet sacks on it, it would stay in there for two hours or longer, depending on the humidity of the air; but if we put sacks on it, we had it all day, when we used it.

Q. It had an indefinite life if you covered it, is that correct?

A. If you keep the air away from it it would last indefinitely, yes.

Q. You described yesterday that your product, Core-Min-Oil, had to be marketed in two containers, because of the fact that it could not, so far as you

(Testimony of Allan B. Ruddie.)

knew, or know, be successfully held in a permanent emulsion which would not break down on standing or transportation. Did Shell know of this two-container situation before the contract of April 8, 1938?

A. Yes; it is in the contract, described in the contract. [240]

Mr. Aurich: I move to strike out the witness' answer as to what is described in the contract. The contract is the best evidence of what is contained therein.

Mr. Hackley: I agree that is true.

Q. Mr. Ruddie, what did you mean by the phrase "The foundry fit the core oil"?

A. Well, the core oil would have to be put in containers, or some method of keeping the air away from it, while it was on the benches, if it was used on the benches for any great length of time. That is one thing the foundry would have to do.

Q. I understand from what you said to them, that linseed oil cores had to be covered, too.

Mr. Hackley: Q. Is that correct, Mr. Ruddie?

A. Well, yes, especially if they built the linseed cores up with tux and other things that they put in it, that causes it to dry fast, too. [241]

Q. Are other things added to linseed oil cores?

A. Yes, there are many things. The Vulcan Foundry told me that they had at least 16—

Q. Just state what you observed.

A. I observed at the Vulcan Foundry they had

(Testimony of Allan B. Ruddle.)

at least 16 things they put in the cores, depending on the kind of casting they wanted to make.

Q. Did they put 16 different things into each core?

A. No, no, it depended on the casting. Some they put tux in alone. Tux is a product of corn-starch that gives it a smooth core. They have silicate sand, they call it. It is a very fine silicate dust. I don't recall the names of a great many of them, but they did build these core solutions up with many products they put in that are not required to be put into Core-Min-Oil.

Q. Do I understand, then, in making up a linseed oil core, that you have not only the sand in the linseed oil, but you have to have other ingredients?

A. That depends on what you want. They do use linseed oil straight for some purposes.

Q. On other occasions they have to have other ingredients?

A. Yes, that is right.

Q. What did you mean by the phrase, "The foundry must fit the oil, the core oil"?

A. With Core-Min-Oil, the ovens would have to fit the Core-Min-Oil. You couldn't bake these cores in an open furnace unless you fixed the oven.

Q. That would only apply to a direct fire oven foundry?

A. That is right.

Q. Was the Shell Company aware of these facts prior to the making of the contract, Exhibit 5? [242]

Mr. Aurich: I object to that as calling for the opinion and conclusion of this witness.

(Testimony of Allan B. Ruddie.)

The Court: The objection is sustained.

Mr. Hackley: Q. Did the Shell Company or any of its representatives discuss with you these facts prior to the making of the contract, Exhibit 5?

A. Yes, Mr. McSwain did, and Mr. Waller, and Mr. Spotswood talked about the gas.

Q. Did they talk about this matter of keeping the core sand covered on the benches before the making of the contract?

A. Yes, that was all talked about prior to the contract.

Q. You discussed yesterday the price factor of Core-Min-Oil in comparison with the price of other core oils, and took as an example linseed oil. And if I remember the testimony of your counsel, of Mr. Aurich, counsel for the defendants, and yourself—I do not mean by that his testimony; I mean his statements—you and he arrived at a hypothetical situation where Core-Min-Oil was priced at 30 cents a gallon and linseed oil at 90 cents a gallon.

(To Mr. Aurich): Am I correct in that statement, Mr. Aurich, as to your figures?

Mr. Aurich: You will have to ask the witness.

Mr. Hackley: I do not want to misquote either of you. I do not want to take the time to turn to the record, although I can do it.

Q. If I understand you there—correct me if I am wrong—if the price of Core-Min-Oil on the market is one-third of linseed oil, the price of enough linseed oil and Core-Min-Oil to make the

(Testimony of Allan B. Ruddle.)

same core would be, so far as core oil is concerned, the same, is that correct?

A. Yes; using those figures it would be the same.

Q. If the price of Core-Min-Oil were higher, the linseed oil [243] remained constant, then the cost of Core-Min-Oil for the same core would be higher, is that correct? A. Yes.

Q. And conversely, lower?

A. That is right.

Q. Is that gallonage price the only factor you had in mind when you stated in your testimony that Core-Min-Oil had an advantage of being lower in cost to the user or foundry man?

A. No, the principal value in core oil is in the drying—in the baking time. That would save a foundry about two-thirds of its fuel costs for baking.

Q. That would be a clear saving, independently of the gallonage price comparison of the product, is that correct?

A. That is right. That is the biggest expense in a foundry, the fuel for baking.

Q. Was that point ever discussed by you with representatives of Shell?

A. Yes, a thousand times.

Q. Before and after the contract, both?

A. Yes, both before and after.

Q. With whom in the Shell organization?

A. Mr. McSwain, Mr. Waller, Mr. Spotswood.

Mr. Aurich: I think this has all been covered

(Testimony of Allan B. Ruddie.)

on direct, and I haven't questioned the fact that Mr. McSwain mentioned those things.

The Court: Get through with this witness.

Mr. Hackley: I am just at the end, your Honor.

[244]

Q. In the course of your cross examination you were presented with a document and asked to read or quote from portions of it. It was identified as Defendants' Exhibit C for identification. I ask you what that document comprises.

Mr. Aurich: I object to that, your Honor. The question asked the witness to read that document. On objection that question was withdrawn, and a question was framed asking him to use the notes for the purpose of refreshing his recollection and tell what the substance of the conversation referred to in his notes was.

Mr. Hackley: All right, I will modify my question in conformity with your statement, Mr. Aurich. I think you know your questions better than I do.

Q. What is that document?

A. It is a memorandum of the conversation I had with Mr. McSwain June 23, 1939.

Q. Is that made in your own handwriting?

A. It is.

Q. When was it made with reference to the date appearing on it? A. June 24, 1939.

Q. And that is one of the sets of notes that you gave to the defendants in the course of your deposition earlier in this proceeding? A. Yes.

(Testimony of Allan B. Ruddie.)

Q. And was known there as Defendants' Exhibit C for identification; is that right? A. That is right.

Q. You used this memorandum to refresh your recollection for certain testimony you gave yesterday relating to the Axelson Foundry visit?

A. That is right.

Mr. Hackley: I offer as Plaintiffs' Exhibit 32 the notes of the witness——

Mr. Aurich: Objected to as immaterial.

Mr. Hackley: ——as the source of the information from [245] which he testified yesterday.

Mr. Aurich: And on the further ground that a document used by the witness to refresh his recollection is not admissible in evidence unless requested by the opposing party.

Mr. Hackley: If your Honor please, I want to quote from the record yesterday as to just what happened. Page 196, line 11, Mr. Aurich asked the witness:

“Q. Mr. Ruddie, use these notes you made on June 24, 1939 and tell me exactly what Mr. McSwain told you about the Axelson Foundry at that conversation, as is disclosed by your notes.”

Mr. Aurich: I submit, your Honor, that the notes speak for themselves.

The Court: Let the notes go in if they serve any purpose.

(Testimony of Allan B. Ruddie.)

(The document referred to was marked
Plaintiffs' Exhibit No. 32 in evidence.)

Mr. Hackley: Q. I show you Defendants' Exhibit E for identification and ask if that again is a set of your notes. A. It is.

Q. In your handwriting? A. It is.

Q. Prepared at what date?

A. July 19, 1939.

Q. At or about the time of the events mentioned in the notes? A. That is right.

Mr. Hackley: These notes were similarly used to Exhibit 32. I offer the notes of the witness as Exhibit 33. They are Defendants' Exhibit E for identification.

Mr. Aurich: We make the same objection; on the further ground that they are self-serving declarations.

The Court: Same ruling, subject to a motion to strike. The notes are going in subject to a motion to strike.

(The document referred to was marked
Plaintiffs' Exhibit [246] No. 33 in evidence.)

Mr. Hackley: Q. Mr. Ruddie, yesterday you were called upon to refer to your notes entitled "Statement of A. B. Ruddie," Plaintiffs' Exhibit 1 for identification to your deposition. The cross examiner asked you various questions; they are at page 200 of the record. Were these notes made up by you personally? A. They were.

Q. For what purpose?

(Testimony of Allan B. Ruddie.)

A. Well, I just tried to write a statement of what I remembered—some of the things, anyway, that I remembered about it. This was written quite a while after.

Q. In the nature of a general synopsis?

A. That is what it was, yes.

Q. For whom was that written, do you remember?

A. Well, possibly for you, but I know I wrote up the statement without being asked to do it. I know that.

Mr. Hackley: To illustrate what the witness was referring to in his testimony in cross examination yesterday, referring to the request of counsel, I offer as Plaintiffs' Exhibit 34 the notes identified by the witness, this being Plaintiffs' Exhibit 1 for identification.

Mr. Aurich: I have no objection to the reception in evidence of the exhibit for the sole and only purpose referred to by counsel. If it is received for any other purpose I make the same objection as to the preceding exhibit.

Mr. Hackley: To reassure you, Mr. Aurich, that is the purpose.

The Court: I will admit it subject to a motion to strike.

(The document referred to was marked Plaintiffs' Exhibit No. 34 in evidence.)

Mr. Hackley: Q. You were called upon yesterday to refer to the Watson Solution or Watson

(Testimony of Allan B. Ruddle.)

product, Mr. Ruddle. Is the [247] solution of Core-Min-Oil the same as the Watson product you referred to?

A. They use the same chemicals but they use it differently. The Baume of the solution I think is about 15.

Q. The qualitative formula is different; is that right? A. Yes, that is right.

Q. Is the procedure of making the solution which you used in Core-Min-Oil the same as that of Watson?

A. No, it is a little different, but practically the same.

Q. Have you any records referring to what is the Watson Solution or Watson product you were referring to?

A. You mean the Watson patents?

Q. For the purpose of illustrating your testimony I show you copies of two patents issued to Joseph Rigby Watson, Nos. 1,900,211 and 1,900,212. Are those the patents you refer to?

A. Yes, that is right.

Q. And describe what you refer to as the Watson product? A. Yes, that is right.

Mr. Hackley: If you haven't copies of those patents I will be glad to give them to you.

Mr. Aurich: I will be able to get them, Mr. Hackley.

Mr. Hackley: To illustrate the witness' testimony, I offer as Plaintiffs' Exhibit 35 Watson pat-

(Testimony of Allan B. Ruddie.)

ent 1,900,211 and as Plaintiffs' Exhibit 36 Watson patent No. 1,900,212. Both of these patents were issued on March 7, 1933.

Mr. Aurich: I object to them on the grounds of utter lack of materiality; on the further ground that no foundation has been laid in that there are a number of formulas and solutions referred to in these two patents and the witness has not been able to identify which, if any, of these solutions is the [248] one referred to by him.

The Court: The objection will be sustained.

Mr. Hackley: Q. Mr. Ruddie, I show you first Watson patent No. 1,900,211 referred to by you, and ask if you find therein any formula which you have referred to as a Watson product in your cross examination, particularly any formula that typifies what you were referring to.

A. This does not give the Baume of the Watson solution, but it has some of the same chemicals in it.

Q. Does this illustrate what you understand to be the Watson product? Do these patents fully disclose it?

A. Well, I wasn't able to make it from these patents, but I did make a solution.

Q. You made a solution?

A. He has the description there of how to make it, but I was unable to make it under this.

Q. I am not talking about the Core-Min-Oil solution; I am talking about the Watson patents.

(Testimony of Allan B. Ruddie.)

A. I am talking about the Watson patents.

Q. You weren't even able to make the Watson formula? A. No, I couldn't.

Q. Do these patents refer to what you understand to be the Watson product?

A. Yes, they are.

Q. Can you identify any one of these formulas being the Watson product, or are all of them what you consider the so-called Watson product?

A. Yes, they are all the Watson product; they have chryolite in there and have a number of things.

Mr. Hackley: I offer these solely for the purpose of illustrating the witness' testimony and for no other purpose.

The Court: The objection will be sustained.

Mr. Hackley: May I offer the patents then for identification [249] respectively as Exhibits 35 and 36 for identification.

(Patent 1,900,211 was marked Plaintiffs' Exhibit No. 35 for identification, and Patent 1,900,212 was marked Plaintiffs' Exhibit No. 36 for identification.)

Mr. Hackley: Q. You testified this morning regarding the furnishing of a solution comprising the ingredients of your Core-Min-Oil solution, or I should say solution in Core-Min-Oil, and either a red oil or a dry mineral oil in it, giving that solution to Mr. McSwain, and he in turn giving it to Mr. Ames of the Shell Company; is that correct?

A. Yes. I wouldn't recall what was in that solu-

(Testimony of Allan B. Ruddle.)

tion. It had some emulsifying agents in it. I couldn't tell what all was in it.

Q. Was that given to Mr. McSwain before or after the negotiations relating to Core-Min-Oil commenced? A. That was prior.

Q. How long prior, Mr. Ruddle?

A. I wouldn't be able to tell you, but it was a month or two prior; possibly longer than that. I am unable to fix any time.

Q. Did that product have anything at all to do with Core-Min-Oil? A. No, it did not.

Q. Were you ever advised at any time that the Shell Company had discontinued the attempts to make a core oil with your formula and had changed their efforts to try to make a core oil with sodium silicate and asphalt emulsion alone?

A. Only when Mr. McSwain told me at that time.

Q. When did he tell you that, approximately?

A. Well, that was prior to the McLaren letter: that they had been able to do the same thing with sodium silicate, and they had also made another solution.

Q. Is that the first time Mr. McSwain mentioned it to you, as you remember it?

A. Well, it seemed to me that we had some [250] samples that were given to me; they told me that they had sodium silicate in it, but I never knew—no one knew what were in the samples.

Q. The first time you had any indication that

(Testimony of Allan B. Ruddie.)

Shell was trying to abandon the efforts with Core-Min-Oil and transfer over to a core oil of sodium silicate and asphalt emulsion was at this conference with Mr. McSwain just before the McLaren letter?

A. No; I knew that Mr. Spotswood was running some tests on sodium silicate to determine whether or not they were hydroscopic. I knew that.

Q. Were you informed by Mr. Spotswood about the results of these tests?

A. I don't recall whether I was or not, but I do know that I saw some cores that Mr. Waller brought in, and he told me it was made out of sodium silicate, but he wasn't sure of the fact—that it was made at the Shell Development laboratories, and he didn't even know then what was in it.

Q. The conversation that you referred to with Mr. McSwain a moment ago, was that the conversation just prior to the McLaren letter in which he told you that Shell was going to try to abandon this project?

Mr. Aurich: Objected to as leading.

Mr. Hackley: I am just trying to identify the conversation.

The Court: Objection sustained.

Mr. Hackley: Q. Mr. Ruddie, what was the conversation with Mr. McSwain with reference to the time that you referred to?

(Testimony of Allan B. Ruddle.)

A. Well, it was just prior to that letter of McLaren's, which was on July 26, 1939.

Q. What else took place in that conversation?

A. Well, he told me that the Shell Company had been able to do the same [251] thing that I could do with this solution with sodium silicate, and that also they had been able to make up a solution out of albino asphalt and some——

Mr. Aurich: I don't know what this is redirect of, I am sure.

Mr. Hackleff: I am just trying to identify that conversation.

Mr. Aurich: It was all gone into on direct; I didn't talk about this conversation.

Mr. Hackley: I am just trying to identify a date.

The Court: I understand you object?

Mr. Aurich: Yes, your Honor; I am sorry. I object to it on the ground that it is not redirect.

The Court: Objection sustained.

Mr. Hackley: Q. How long prior to the McLaren letter do you mean this conversation took place, Mr. Ruddle?

A. Possibly two months; maybe less time.

Mr. Hackley: That is all.

Recross Examination

Mr. Aurich: Q. I now show you a letter dated San Francisco, California, December 17, 1937, addressed to the American Bitumuls Company, which is signed A. B. Ruddle and J. Lydell Peck, and ask

(Testimony of Allan B. Ruddie.)

you if you can identify the signatures to that letter.

Mr. Hackley: I might say I have never seen this document [252] before. That is why I am taking the time to read it, Mr. Aurich.

A. Yes, that is my signature and that of Lydell Peck.

Mr. Aurich: Q. You wrote this letter to the American Bitumuls Company on or about the date it bears? A. Yes, I think so.

Q. I call your attention to the first paragraph of this letter, which reads:

“We have read the enclosed contract dated December 16, 1937 and left with us on December 17, 1937, also the survey signed by K. N. Cundall accompanying the same.”

And as soon as your counsel has finished inspecting the document which he has in his hand, I will show it to you and call your attention to the fact that it has a typewritten signature at the end corresponding to that on the first paragraph of the letter to which I have referred, and will ask you if you recall receiving that survey, or report, I should say.

(Addressing the Court): I believe there will be just one more question following this, your Honor, so I will stay within my two or three.

So that the Court will not unduly criticize counsel for handing this memorandum to plaintiffs' counsel at this late date, I think perhaps I might explain that this document just came into my

(Testimony of Allan B. Ruddle.)

hands this morning. Before I could obtain it, it was necessary for me to procure the issuance of a subpoena duces tecum to the American Bitumuls Company.

Mr. Hackley: I might say, Mr. Aurich, all I am attempting to do is to just scan this to get the general text of it; I can't pretend to read a report like this under these circumstances.

May I see the letter? [253]

Mr. Aurich: Yes (handing letter to Mr. Hackley).

Now, will you read the latter part of the question to the witness so that he will understand what he is being interrogated about, please, Mr. Reporter—or do you understand the question?

The Witness: Yes, I think so. Yes, we received that.

Mr. Aurich: I now offer in evidence the letter referred to by the witness dated December 17, 1937 from Mr. Ruddle and Mr. Peck to the American Bitumuls Company, and ask that it be marked Defendants' Exhibit Z, and I now offer as Defendants' Exhibit AA the report referred to in the letter which has been identified by the witness. I might say the only purpose of the offer is to impeach the testimony of the witness, who testified that he had not received any report of any survey or any investigation by the American Bitumuls Company, and this document Defendants' Exhibit AA is a report from Mr. Cundall of the American

(Testimony of Allan B. Ruddie.)

Bitumuls Company of the results of work done by him in foundries and which was transmitted to these plaintiffs.

Mr. Hackley: If your Honor please, I object to the offer of the letter upon the ground that it is incomplete. The letter referred to an "enclosed contract dated December 16, 1937, and left with us on December 17, 1937." The letter is otherwise, as far as I am concerned, identified. I object to the offer of the document entitled "Core Oil Survey," for the reason that it is not properly identified; no proper foundation has been laid; and despite what counsel has said, there is no evidence that I have seen or heard—perhaps the witness said it and I didn't hear it—that Mr. Cundall was somebody connected with the American Bitumuls Company.

Mr. Aurich: I will withdraw the part of the statement to the Court that Mr. Cundall was connected with the American [254] Bitumuls Company.

Mr. Hackley: I make my objection first to Exhibit Z for lack of completeness of the document.

The Court: Objection overruled. I will allow both of them for the limited purpose offered.

(The documents referred to were marked respectively Defendants' Exhibit Z and AA in evidence.)

Mr. Aurich: No further questions of this witness.

May I request, Mr. Hackley, with the permission

(Testimony of Allan B. Ruddle.)

of the Court, that we be permitted to substitute photostatic copies of the last two exhibits?

Mr. Hackley: Will you furnish copies to us?

Mr. Aurich: We will furnish copies to you.

Mr. Hackley: Yes, if you will furnish copies to me I have no objection.

Mr. Aurich, have you any evidence of where the balance of this communication is? Did your subpoena go to that?

Mr. Aurich: No.

Mr. Hackley: Do you have a copy of your subpoena?

Mr. Aurich: I don't know whether I have or not.

Mr. Hackley: I would like to inspect it during the noon recess.

If your Honor please, this document refers to an enclosure which is not provided, although there are other enclosures that are.

The Court: The witness on the stand identified it.

Further Redirect Examination

Mr. Hackley: Q. Mr. Ruddle, do you recall receiving a contract from the American Bitumuls Company on December 17, 1937?

A. Yes, we did. [255]

Q. Is that an executed agreement?

A. No, it was not an executed agreement. We were negotiating with the American Bitumuls Company for a contract, and when we received the

(Testimony of Allan B. Ruddle.)

contract it was so small, what they had agreed to do, that we put it in an envelope and sent everything back.

Q. Did you keep a copy of the document which they sent to you, or do you remember?

A. No, I don't recall any document at all. We sent everything back that came to us, as I recall it.

Mr. Hackley: I don't want to take the time of the Court to examine the witness on this point at this stage. I have here three documents, any one of which may be the document referred to in that letter. I would like to reserve the right to ask the witness about that after the noon recess. That is the only point that I have left with this witness.

The Court: You may examine now. Let's conclude with this witness.

Mr. Hackley: I have concluded with the witness.

The Court: All right. Step down. Call your next witness. [256]

Mr. Hackley: The next step proposed for the plaintiffs' case is to proceed to present to your Honor a group of five or six depositions which have been taken in advance of the trial and over the period of the last year with the thought of reducing a great deal of the evidence which would normally be taken from the witness stand here to deposition form, thereby saving some of the time before your Honor. I think that the depositions can be expeditiously and promptly read into the

record here in a way that will present the principal facts which are disclosed therein to your Honor.

The first deposition which I wish to proceed with is the deposition of Arthur C. Waller, whose name has come into this record. I will offer as Plaintiffs' Exhibit 37 the deposition of Mr. Waller, and as I proceed through the deposition, will offer the exhibits which are referred to in the deposition and identified therein successively as exhibits of the plaintiff in the order in which they appear.

Mr. Aurich: The defendants object to the introduction in evidence of the deposition just offered, for two reasons, one of which is sound legally, and the other of which is in the discretion of the Court. The one I make in the discretion of the Court is this: Mr. Waller is an employee of the Shell Oil Company, Incorporated, one of the defendants. He is at present in San Francisco staying at the Clift Hotel, I believe, and he will be a witness called on behalf of the defendants in their case. Therefore, in the first place, the reading of this deposition into the record by the plaintiffs is going to do nothing but needlessly cumulate the evidence that will have to [257] be produced, because, of course, the defendants have a right to produce their evidence in their own way. Secondly, and more to the point, is the fact that this offer of this deposition is not—rather, this deposition is not receivable in evidence under the provisions of Rule 26(d) of the Rules of Federal Civil Procedure. I don't know whether your Honor

is familiar with that, or whether you care to have me read it to you.

The Court: Read it.

Mr. Aurich: Subparagraph (d) commences as follows:

“At the trial or upon the hearing of a motion or an interlocutory proceeding, any part or all of a deposition, so far as admissible under the rules of evidence, may be used against any party who was present or represented at the taking of the deposition or who had due notice thereof, in accordance with any one of the following provisions:

“(1) Any deposition may be used by any party for the purpose of contradicting or impeaching the testimony of deponent as a witness.”

Obviously, that is not this case.

“(2) The deposition of a party or of anyone who at the time of taking the deposition was an officer, director, or managing agent of a public or private corporation, partnership, or association which is a party may be used by an adverse party for any purpose.”

Mr. Waller, as the record shows, is a salesman employed in the asphalt department of the Shell Oil Company, and therefore does not come within that provision.

“(3) The deposition of a witness, whether or not a party, may be used by any party for any purpose if the Court finds: 1, that the

witness is dead;" ——That has not been [258] established here, and I trust Mr. Waller will not die before the case is concluded—— "or 2, that the witness is at a greater distance than 100 miles from the place of trial or hearing, or is out of the United States," et cetera, et cetera.

Now, that is the provision of the rule on which I rely and which makes the deposition of Mr. Waller inadmissible. Mr. Hackley may reply, quite logically, that he has no proof that Mr. Waller is not in San Francisco because Mr. Waller is a resident of Seattle. However, in that connection, as an officer of the court, I take it my word is good, and I am perfectly willing to be sworn and establish those facts. And, furthermore, I am more than willing to agree that if I do not produce Mr. Waller here and take his testimony and produce him for cross examination, then of course his deposition may be used.

And I might say that that same objection, with minor variations, will go to the offer of all of the depositions that the plaintiffs have in mind.

Mr. Hackley: Your Honor, this matter takes me completely by surprise. I had no advance notice other than that two or three minutes before your Honor came on the bench, in informally chatting with Mr. Aurich, he mentioned the fact that he was going to object to this deposition or these depositions on this ground. I had no advance notice of any of these facts. While I have no reason to

doubt Mr. Aurich's word in any way as to what he has said about Mr. Waller's being present in San Francisco, I want to call attention of the Court to the fact that Mr. Waller testified that his residence was 8258 15th Avenue Northeast, Seattle, Washington; that his business address is care of Shell Oil Company at 1219 Westlake Avenue North, Seattle; that his occupation was civil engineer in the Seattle [259] office of the Shell Oil Company, Incorporated, thus identifying himself. The deposition of the witness was taken because the witness was resident more than one hundred miles from the place of trial of this case. The deposition was taken for that purpose and has been presented to your Honor with that in mind, and was a part and is a part of our regular presentation of evidence in this case.

Now, at this late date counsel will try to prevent our presenting this testimony, validly taken and properly taken, of a witness who within the wording of Rule 26 (d), subdivision 3, part 2, is, or at the time of its taking was clearly admissible.

Now, I am frank to say that this matter comes on as a complete surprise, and I haven't before me authorities as to how the courts have interpreted the second subdivision of Section 3 of paragraph (d) of Rule 26. I don't know whether that word "is" refers to the fact that the witness is at a greater distance than one hundred miles from the place of trial—refers to the time of trial or the time of the taking of the deposition. I am reasonably certain, however, that any fair interpretation

of the rule would provide that the test would be the place of the witness at the time of the taking of the deposition, and that, certainly, if counsel intended to claim that the witness was present and available he should have done one of two things here: Either he should have had Mr. Waller in the courtroom when this deposition was to be presented, or he should have given the plaintiffs here notice of the fact that he intended to make Mr. Waller available for testimony at the time of the trial.

The Court: Is he available now? [260]

Mr. Aurich: Well, right this minute, your Honor? Is that what you mean?

The Court: Yes.

Mr. Aurich: I can find out for you in just about five minutes. I know that he is here in San Francisco; I have an appointment with him in my office.

The Court: Temporarily I am going to sustain the objection to this. You may renew your offer later on.

Mr. Hackley: My problem, your Honor, is—and this I am deeply apologetic to the Court about—is that I was not prepared with any other evidence to present during the fore part of this afternoon.

The Court: What evidence, if any, have you?

Mr. Hackley: I have other witnesses.

The Court: Who are they? The record is here. Proceed.

Mr. Hackley: Yes. I have coming from the Macauley Foundry in Berkeley two of the core-

makers who work at that foundry and worked during all of these experiments with Core-Min-Oil and who can speak to us as experts who have worked with Core-Min-Oil on the subject of Core-Min-Oil, its attributes and values. I could probably arrange to have these gentlemen here in court to testify in whatever length of time it takes to drive over to the foundry and back, assuming that I can get them off duty this afternoon, and I believe it can be done.

The Court: What other testimony have you?

Mr. Hackley: I had planned, with the depositions which are presented to your Honor, and with the testimony of these men, to rest the plaintiffs' pending case.

Mr. Aurich: In justification of defendants' position, your Honor, I may say that this deposition of Mr. Waller is not [261] the only deposition of the defendants' employees taken by plaintiffs. They proceeded with a rather elaborate, thoroughgoing discovery program. They took the depositions of witnesses residing right in this locality, for example in Oakland and Alameda and in Contra Costa County, all of which persons are subject to the subpoena of this court to be here now. And if Mr. Hackley had desired the presence of any of those witnesses and had so advised me, I would have had all of them here for him at any time he wants; and I will produce any witness in the employ of the Shell Company that is available at any time that is agreeable to Mr. Hackley or to the Court,

if I can have just a few minutes' notice or sufficient notice to get them here.

Mr. Hackley: To clarify the matter, your Honor, it wasn't my plan to offer, except with leave of counsel, the depositions of witnesses who did not fall within the meaning of the rule at this time; but it was my opinion, and it is now, based upon the authorities as I understand them and on the rule, that I am entitled to offer not only the deposition of Mr. Waller but I am entitled to offer at this time the deposition of John Floyd McSwain. And so that we may discuss the matter formally on the record, I would like, as long as I understand your Honor has sustained the objection for the time being to Mr. Waller's deposition, to offer as Plaintiffs' Exhibit 37——

The Court: Mr. McSwain is available too, is he?

Mr. Aurich: Yes, your Honor.

The Court: Same ruling.

Mr. Hackley: If your Honor please, I would like to say this: Mr. McSwain falls into a different class in the rule altogether.

The Court: In what respect? [262]

Mr. Hackley: Mr. McSwain is a managing officer of this corporation, as the testimony shows and as he admits in his deposition,—the manager of the asphalt division of the company.

The Court: Very well; that makes no difference to me now. At this time I am sustaining the objection. I am governing the order of proof here and the manner in which the case is presented. For the

purpose of the record I will sustain it at this time.

Mr. Hackley: Then I will, if I may, just to complete the record, offer for identification as Exhibit 36——

The Court: Let both of them be admitted.

Mr. Hackley: Mr. Waller's deposition will be offered as Exhibit 37 for identification, and Mr. McSwain's deposition as Exhibit 38 for identification.

(The deposition of Mr. Waller was marked Plaintiffs' Exhibit No. 37 for identification, and the deposition of Mr. McSwain was marked Plaintiffs' Exhibit No. 38 for identification.)

(Plaintiffs' Exhibit No. 38 for Identification, the deposition of John F. McSwain, is set out at page 1046 of this printed record.)

Mr. Hackley: Do I understand that it is your representation, Mr. Aurich, that Mr. Zublin, Mr. Wright and Mr. Spotswood are all now resident within the jurisdiction of this court and within one hundred miles of this courtroom?

Mr. Aurich: That is quite correct; and each one of those named witnesses will appear as a witness on behalf of the defendants whether they are called by the plaintiffs or not.

Mr. Hackley: And that each one of those individuals is available and will be produced, if I request it, without the necessity of a subpoena, or must I subpoena them?

Mr. Aurich: Each of those witnesses, as well as any other witnesses that I can produce for you that are employed by the [263] Shell Company, will be produced without the necessity of any subpoena whatsoever.

Mr. Hackley: As I say, your Honor, that leaves me at this moment wholly and unexpectedly,—because I have sincerely tried to interpret these rules—they are new rules and very largely uninterpreted except as your Honor has done it here—it leaves me without any witness to present at this point.

The Court: Aside from the two coremakers, that is the testimony which you will have in chief?

Mr. Hackley: Yes, your Honor.

The Court: They can be called out of order, can't they?

Mr. Hackley: I suppose I will have no serious objection to it except on the motion——

The Court: I am anxious to get rid of this case. You asked for four days. Tomorrow will be the fourth day.

Mr. Aurich: I don't believe, your Honor, that I have ever represented to the Court that this case would take four days. I am sure no one on behalf of the defendants has ever made that representation.

Th Court: I am quite sure that someone was here and made the representation to me that this case would take four days.

Mr. Aurich: I am not doubting that statement

at all, your Honor; I am merely saying that I am quite sure no representation——

The Court: Just think; we are here now on the afternoon of the third day of this hearing and we have heard one witness.

Mr. Aurich: That is right.

The Court: Proceed and call your witnesses.

Mr. Aurich: All right, your Honor.

Mr. Hackley: Without prejudice, your Honor, to calling these coremakers that I speak of as witnesses, either out of [264] order or in rebuttal—I think it would be adequate to call them in rebuttal for the plaintiffs—I will rest the plaintiffs' opening case. And that, I assume, is in line with your Honor's wishes in that direction.

The Court: That is all right, just so the case goes forward; that is all I am interested in.

Mr. Aurich: At this time the defendants desire to make a motion to dismiss.

The Court: Before you start making your motion to dismiss, the testimony isn't all in.

Mr. Aurich: I understood Mr. Hackley to say that he had rested his case, your Honor.

The Court: Yes.

Mr. Hackley: With reservations.

The Court: With reservations as to two witnesses.

Mr. Aurich: I am quite satisfied these two witnesses cannot affect the points that I want to make, your Honor.

The Court: Proceed.

Mr. Aurich: I am perfectly satisfied to have your Honor take the motion under submission until these two witnesses have testified.

The Court: Very well.

Mr. Aurich: My motion to dismiss——

Mr. Hackley: Before you start, Mr. Aurich, may I just make one additional statement, so that you are not misled by my position?

Mr. Aurich: Yes.

Mr. Hackley: I am also reserving the right to call these other witnesses whose depositions have been taken, because that is a part of my opening case; just the fact that I am [265] caught by this surprise that I am unable to present them——

The Court: There is nothing unusual about Mr. Hackley's presentation, I know, at the proper time. Proceed with the case.

Mr. Aurich: It will be all right for me to proceed with my case?

The Court: Yes.

Mr. Aurich: Thank you.

My motion to dismiss is based under the provisions of Rule 41(b) and is made on behalf of both defendants, and the grounds are these: that assuming all the facts that have been established in plaintiffs' opening case to be true, nevertheless the plaintiffs are not entitled to any relief herein for the following reasons:

First, there can be no injunction issued by this Court against either of the defendants as to the secrecy or alleged secrecy of any disclosure which may have been made by Mr. Ruddle to the defend-

ants, for the reason that the subject matter of those disclosures is now contained in United States letters patent which are public knowledge and known to everyone who reads the patents.

Secondly, the complaint asks for specific performance against both of the defendants. Under the authorities the contract, on its face, is one which is not capable of specific performance, because it calls for a series of acts to be performed over a period of years, the doing of those acts requiring special skill, services and attention; and the authorities are uniform that under those circumstances there can be no decree for specific performance.

Third, we move to dismiss on behalf of both defendants, [266] because, assuming the facts herein to be true, the plaintiffs have not established any damage or any measure of damage by Shell's alleged breach of this contract.

As to the Shell Development Company, I move that the case be dismissed as to it because, in addition to the reasons I have enumerated, the Shell Development Company was not a party to the contract, and therefore no relief sought here can be awarded against it.

The Court: I am going to rule now upon the Development Company case.

Mr. Aurich: I beg your pardon?

The Court: I am prepared to rule on that. I will grant the motion as to the Development Company.

Mr. Hackley: May I be heard on it, your Honor?

The Court: Proceed.

Mr. Hackley: The point that we have made on the Shell Development Company phase is this: that, as the testimony will show when we have an opportunity to produce it, the testimony of Dr.——

The Court: If you are going to qualify it, why, I will let him submit his motion, and you may proceed. If you are qualifying it, I don't know what testimony is coming.

Mr. Hackley: That's it; I have the testimony of Dr. Kenneth A. Wright, which was taken and clearly involves the Shell Development Company.

The Court: Let him submit his motion and go forward with the case.

Mr. Hackley: I understand that the ruling is reserved, your Honor?

The Court: Yes. [267]

(During defendants' opening statement, the following statements were made on behalf of defendants):

Mr. Aurich: There is another provision of the contract which follows that one that I should like to call your Honor's attention to, and it needs a little explanation. When the matter was first taken to the Shell Company by Mr. Ruddle, as a matter of routine it was submitted to the patent department—that is the Shell Development Company, which is for our purposes the patent department of Shell Company, although they might not like that,—and a cursory investigation was made to see whether Shell could supply asphalt to foundries for use as a core oil without infringing anybody's patent. And they came across a patent to a man by

the name of Thomas, concerning which I interrogated the witness yesterday. This patent, for practical purposes, broadly covers a core oil composed of sand, water and asphalt emulsion, I believe. Shell felt that that patent, if valid, would be sufficient to prevent their selling asphalt to be used in combination with Mr. Ruddle's solution, because, although there were differences between the two, to be sure, the Thomas patent would be the broad patent and the sale of Core-Min-Oil would be an infringement of it. So the contract provided that Shell was to endeavor to purchase this Thomas patent for [278] \$5,000 or less. It further provided that Shell should assign to Peck and Ruddle a one-half interest in this Thomas patent upon Peck and Ruddle reimbursing Shell for one-half of the purchase price. The method of reimbursement provided for in the contract was that as royalties accumulated, Shell was to take out of the pot half of the money they spent for the patent. And pursuant to the provisions of the contract, Shell did purchase the Thomas patent and paid \$1,000 for it.

Now, Shell has never sold any Core-Min-Oil or other product for foundry use; no royalties have accrued to Shell. Therefore no royalties have accrued to Peck and Ruddle, and therefore Shell has not been reimbursed for this \$500. So it still owns the Thomas patent. However, it isn't in the core oil business. It had its lesson, and the Thomas patent is of no value to it whatsoever. So we are willing to do either one of two things, at the election of the plaintiffs: We are willing to give them the entire title to the Thomas patent upon the payment of \$1,000 that we paid for it, or we will give them a half interest for the \$500, if they want it. We don't want it. [279]

JOHN F. McSWAIN,

Called for the Defendants; sworn.

Direct Examination

Mr. Aurich: Q. Will you state your full name, Mr. McSwain, for the Court and the reporter?

A. John F. McSwain.

Mr. Hackley: I understand that at the conclusion of the day's session I can interrupt Mr. McSwain's examination on behalf of the defendants and proceed to close the plaintiffs' case, and I will resume again?

The Court: Yes.

Mr. Aurich: Q. What is your age, Mr. McSwain?

A. Fifty-five.

Q. And your occupation, please?

A. Manager of the asphalt department for the Shell Oil Company.

Q. That is the Shell Oil Company, one of the defendants in this case? A. Yes, sir.

Q. Where do you reside?

A. At 2525 Rose Walk, Berkeley.

Q. For how long a period of time have you been manager of the asphalt sales department of the Shell Oil Company?

A. Oh, for a little over ten years.

Q. How large a department in the organization of the Shell Oil Company is the asphalt sales department?

A. Well, it is one of the less important departments.

(Testimony of John F. McSwain.)

Q. Prior to January 1, 1938, —

Mr. Hackley: I object to that, your Honor, as a conclusion. The question is how large is it, not what this witness thinks of the size.

The Court: If there is any further inquiry you want to make, [281] you develop the facts yourself.

Mr. Aurich: Q. Prior to January 1, 1938, what products of the Defendant Shell Oil Company were being sold by your department?

A. Well, the road-building and asphalts—road oils, emulsions for road-building, and asphalts for roofing purposes.

Q. Are you familiar generally with the products that have been sold by the Shell Oil Company during your employment with it? A. Yes.

Q. As manager of the asphalt division of the Shell Oil Company, and from an inspection of the records of your department, are you familiar with the nature of the products that had been sold by your department prior to your entering the employ of the company? A. Yes, sir.

Q. Will you state whether or not at any time prior to January of 1938 the Shell Oil Company had ever manufactured or sold any core oil or other similar product for foundry purposes?

A. They had not.

Q. From January, 1938, up to the present time, has the Defendant Shell Oil Company ever manufactured and sold any core oil for foundry purposes? A. It has not.

(Testimony of John F. McSwain.)

Q. Has the Shell Oil Company manufactured and sold any core oil for any purposes?

A. It has not.

Q. Do you know whether or not the Shell Oil Company has completely abandoned all efforts to manufacture and sell or exploit any kind or type of core oils or products for related factory uses?

A. It has.

Q. Do you know a man by the name of Allan B. Ruddle? A. I do.

Q. For how long a period of time have you been acquainted with him?

A. Oh, I would say about 40 years.

Q. Do you recall a meeting with Mr. Ruddle sometime in the latter [282] part of 1937 or the first part of 1938? A. I do.

Q. Have you any way, at this time, of fixing the exact time of your meeting with Mr. Ruddle?

A. No, I haven't; my recollection is that it was in the latter part of '37 or early in '38; just when, I don't know.

Q. Where was this meeting that you had with Mr. Ruddle that you have described?

A. Well, the meeting—I believe that I met him on the street. That recollection is somewhat vague, but he came to my office a few days later.

Q. Do you have any recollection as to anything that was said by Mr. Ruddle to you at that meeting on the street? A. No, I haven't.

Q. Approximately how long prior to that meet-

(Testimony of John F. McSwain.)

ing with Mr. Ruddle on Market Street had it been since you last saw Mr. Ruddle?

A. Well, it was several years; I don't know just how long.

Q. Well, prior to your meeting with Mr. Ruddle on Market Street did you used to meet with him frequently or infrequently?

A. Very infrequently.

Q. Can you tell me how infrequently or frequently you had seen Mr. Ruddle prior to your meeting with him on Market Street; say for a 10-year period prior thereto?

A. Well, my recollection is that possibly once in the 10 years previously.

Q. Who was present on the occasion when Mr. Ruddle came to your office in the latter part of 1937 or the first part of 1938?

A. So far as I recall, he and I were the only ones present.

Q. Can you at this time recall the substance of the conversation that was had between you and Mr. Ruddle at that time and that place? A. I can.

Q. Will you give it to us to the best of your recollection, please?

A. Mr. Ruddle came to my office and stated that—generally, that [283] he had a core oil—I didn't know what a core oil was—and he described this core oil, saying that it used an asphalt emulsion and another solution which was a secret solution. And I am not sure at that time whether he referred to a sodium silicate or not. That is something I can't

(Testimony of John F. McSwain.)

recall, although he did refer to the fact that there was a secret solution which was the secret of the success of this material. I told him that I presumed that he wanted us to sell it, or wanted somebody to take this thing up, and I told him that I thought a thing of that sort should not be offered to our company; it should be taken to some company supplying foundries, or a company familiar with foundry work. He said—he didn't disagree with that, but said he simply wanted me to go over to Macauley's Foundry in Oakland and see what he had done. He pointed out that this emulsion used, or this core oil used large quantities of asphalt emulsion. And in view of the fact that it is part of my job to develop new markets for asphalt emulsion, I agreed to go over to Vulcan's with him.

Q. Did you say Vulcan Foundry?

A. I said "Vulcan"; I should have said Macauley's Foundry.

Q. Do you recall whether or not anything was said by Mr. Ruddell to you at that first meeting concerning the advantages or disadvantages of his product as compared to other products?

A. Yes.

Q. What other products did he mention to you, if any?

A. He mentioned linseed oil as the binder that was ordinarily used for core oil, or as a core oil.

Q. Will you state whether or not at this conversation that you had with Mr. Ruddell he explained to you what a core oil was? A. He did.

(Testimony of John F. McSwain.)

Q. What they did with it, and so forth?

A. He did.

Q. Can you tell us now what, if anything, he said concerning the [284] advantages that he claimed for his core oil over linseed oil?

A. The advantage that he stressed at that time was the shorter baking time and the consequent lessened consumption of fuel resulting from the shorter baking time. I think he gave me relative figures as to the baking time required for his core oil and the time required for linseed oil—that is, approximately relative figures. Another advantage that he claimed was the freedom from gassing, which he explained as being a tendency on the part of certain core oils to create gas pockets in castings. He also said that the cores did not burn in. “Burn in,” I believe, is the tendency of the core to disintegrate to some extent and allow the molten metal to enter the core and give a rough interior. But the chief advantage that he claimed at that time—the one that he laid particular stress on, as I recall, was the economy resulting from the lessened fuel consumption.

Q. Can you recall any other advantages that Mr. Ruddle claimed for his Core-Min-Oil as compared with linseed oil at this first visit?

A. Well, there were various advantages claimed, but I can't be positive that they were at the first visit or not.

Q. Do you recall whether or not Mr. Ruddle

(Testimony of John F. McSwain.)

mentioned to you anything about the difficulties, if any, that he had been having with his core oil?

A. Yes. He said that he had been working at the Macauley Foundry, and that he had found that some of his cores [285] were excellent and some very bad, and he couldn't figure out why the bad ones were bad and the ones that he said were good were good; that if he could find out what caused that, if he could overcome that difficulty, then he had something that was extremely valuable.

Q. Did he make mention at this first conversation with you of any other difficulties that he stated he had encountered?

A. I don't recall that he had encountered any other difficulties.

Q. Did you subsequently go to the Macauley Foundry to observe the results of what Mr. Ruddle told you was his work?

A. I did.

Q. Who went with you?

A. Mr. Raymond Harsch and Arthur C. Waller.

Q. For the purpose of the record will you identify each of those gentlemen for me, please?

A. Mr. Harsch functions as assistant manager of the department and is a technical assistant, has to do with technical matters, road-building,—of course, that is our primary business. Mr. Waller was also a technical man assigned to field work.

Q. Is Mr. Waller a resident of Seattle?

A. At the present time, yes.

Q. And he is now in San Francisco?

(Testimony of John F. McSwain.)

A. Yes.

Q. He is remaining here at my request for the purpose of attending at this trial?

A. Well, I think so; he is remaining here, anyway.

Q. What was your purpose in going to the Macauley Foundry to observe these cores with Mr. Ruddle?

A. Well, our business is that of selling asphalt for road-building—asphalt emulsions for road-building, as well as some other purposes, and in view of the fact that Ruddle said that this core oil used large quantities of [286] emulsion, I thought that it was very proper for me to investigate and to see whether or not there was a market in this type of core oil for emulsions.

Q. Now, you did go to Macauley's, I believe you said? A. Yes.

Q. Prior to that visit to Macauley's had you ever been in a foundry in your life? A. I had not.

Q. Prior to that visit to Macauley's were you familiar at all with foundry operations?

A. Not to any degree.

Q. Prior to that visit to the Macauley Foundry had you any knowledge whatsoever as to the purpose for which a core oil was used in a foundry, outside of what Mr. Ruddle may have told you?

A. Until he came into my office I did not know there was such a thing as a core oil.

Q. Do I understand that Mr. Ruddle went with you on that visit to the Macauley Foundry?

(Testimony of John F. McSwain.)

A. Yes, he did.

Q. How long a period of time elapsed, as nearly as you can recall, between the date of his visit to you at your office, that you have described, and the time that you went to the Macauley Foundry?

A. Well, it was a few days; it may have been a week; shortly afterwards. I can't say exactly how long.

Q. Will you tell us in your own words, in as much detail as you can, what occurred after you arrived at the Macauley Foundry? That is, I would like to have you tell the Court where you went in the foundry, what you observed, what was said by anybody that you can now recall, and if you can't recall the exact details of the conversation, will you please give us the substance of what was said, to the best of your recollection?

A. Well, Ruddle led us into the foundry and over to the northwest corner of the building where the core room was located. There was some conversation with the core maker who was working, as I recall, on the [287] head of some kind of a motor. We looked at the oven in which the cores were baked, and looked at some cores that were stacked, or piled, or laid along on a two by four, one of the braces at the back of the building. I believe there were also some cores, or pieces of cores, that were back of the foundry. Ruddle pointed out some of the cores that he said were good cores, and some that he said weren't good cores,—again referring to the

(Testimony of John F. McSwain.)

fact that that was his difficulty; if that could be overcome, then this was an extremely valuable thing. He led us over to the opposite diagonal corner of the building and showed us a casting of a deep well pump head. I believe when he first came to the office he referred to this pump head. At any rate, he showed us this pump head, and we felt the interior of the casting, at his request, to see how smooth it was. We were introduced to the foreman of the foundry. As I recall it, we had, then, a very brief conversation if any at all, with him.

The Court: Q. Do you recall his name?

A. I can't recall his name. Vaguely, it seems to me that it was Cox, your Honor, but I can't remember.

Mr. Aurich: Q. Would you remember his name if I should mention it to you?

A. I might; I can't be sure.

Q. Was it Otto Gosch? A. What is that?

Q. Was it Otto Gosch?

A. No; that was—I believe Otto Gosch was the core maker. He was—I remember his appearance; he was a big, burly man. But the superintendent or the foreman——

Q. Olsen? A. What is that?

Q. Olsen?

A. Olsen was the man. Olsen was the foreman. He was a man, I would say, around 60, a very thin man; and as I recall it we had a very brief conversation with him. It may not have been any con-

(Testimony of John F. McSwain.)

versation. We were introduced to him. There was [288] some conversation with the core maker. As I recall it, I had a very brief conversation, or possibly no conversation, with the core maker, although Waller talked to him a little longer about the core that he was working on. After that, as I recall it, we got in the car and came back to San Francisco.

Q. At this first visit that you made to the Macauley Foundry that you have described, did you observe anyone making any cores with what was then described to you as Core-Min-Oil?

A. No.

Q. By the way, Mr. McSwain, at this first visit to the Macauley Foundry were you familiar with the phrase "Core-Min-Oil"?

A. I don't think so. I think—no, that came—that developed later; I can't say just how much later, but sometime later. At that time we didn't talk about it—as I recall, we didn't talk about it as Core-Min-Oil, although—well, I wouldn't be sure; maybe we did and maybe we didn't.

Q. What did Mr. Ruddle call his product, just a core oil?

A. It was discussed as a core oil.

Q. Following that visit to the Macauley Foundry that you have just described, did you ever pay any other visits to the Foundry? A. No.

Q. You never returned to that foundry at any time?

(Testimony of John F. McSwain.)

A. I don't recall that I ever did.

Q. Do you know whether Mr. Waller ever made any other visits to the Macauley Foundry?

A. I believe that he did.

Q. He was subsequently assigned to work——

A. He was subsequently assigned to work with Ruddle.

Q. Following your visit to the Macauley Foundry, which you have just described, what next occurred with respect to this core oil, or what followed after your observations that you made at that time?

A. Well, we discussed the matter in the office, and came [289] to the conclusion that it would be a wise thing for us to cooperate with Ruddle to whatever extent we could in finding out what the source of this single difficulty was, so that if this was a successful core oil we would be in the favored position in selling the emulsion to whoever used the core oil.

Q. What was the first thing, if you did do something, that you did in connection with attempting to solve this one difficulty that Mr. Ruddle had discussed with you?

A. The first thing?

Q. The first thing that you recall.

A. Well, I assigned Waller to work with Ruddle; that is, Waller's province was that of observer.

Q. Well, I perhaps am confusing you, Mr. McSwain. Following this discussion that you mentioned a moment ago, did you have any sand tests made of sand at the Macauley Foundry?

(Testimony of John F. McSwain.)

A. Yes, I believe—in fact, I know that Ruddie supplied us at our request with a sample of core sand and a sample of the emulsion which he had been using. The emulsion he had been using, as I recall, had been supplied, or he had secured from the Union Oil Company. And we had tests run on that sample to see whether we were in a position to manufacture an emulsion with comparable qualities. We also asked him for a sample of the sand. We had a theory that the cause of this single difficulty which he said he had with his core oil was very likely due to improper percentages of binder, or an improper relationship between the binder and sand.

Q. What do you mean by “binder”?

A. Of his core oil.

Q. What do you mean, “his core oil”?

A. Core oil. Our experience is with road-building, and in the construction of a road, particularly with fine aggregate mixes, the amount of binder that is added to the fine aggregate is very frequently a cause of difficulty; that is, if there is insufficient binder the road [290] ravel; if there is too much binder the road pushes and becomes wavy. So to us the percentage of binder was a critical thing, and so we asked him for a sample of core sand in order that we could make a sieve analysis of the sand and determination of the surface areas, and applying a formula that we would apply for a road construction sand, arrive at what might be the proper percentage of core oil for that sand.

(Testimony of John F. McSwain.)

Q. And the Shell Company did make that test of the sand? A. We did.

Q. What was the result, by the way, of the comparative test of the Union Oil emulsion with the asphalt emulsion manufactured by Shell?

A. Well, we found that we manufactured an emulsion that was quite comparable—practically identical, I will say.

Q. For the purpose of the record, and for future reference, can you tell how that asphalt emulsion manufactured by Shell was designated?

A. The code number that we applied to that emulsion was Y-104.

Q. Did you advise Mr. Ruddle of the results of this sand analysis you had made? A. We did.

Q. Did you advise Mr. Ruddle of the results of the comparative tests between the Union Oil emulsion and the Shell's Y-104?

A. I believe we did.

Q. Do you recall at this time whether or not you made any recommendation to him as a result of your findings in that regard? A. I believe we did.

Q. Do you recall whether those recommendations were in writing, or were they oral?

A. We wrote him a letter.

Mr. Aurich: It is stipulated between the parties, if the Court please, that the copy of a letter which I have in my hand, dated January 14, 1938, addressed to Mr. Ruddle and signed "Shell [291] Oil Company," is a true and correct copy of a letter

(Testimony of John F. McSwain.)

which was written on or about the date it bears, and that the original was received by the plaintiff, Mr. Ruddle.

Mr. Hackley: That is correct.

Mr. Aurich: I will ask that the letter thus identified be offered and received in evidence as Defendants' Exhibit BB.

(The copy of the letter referred to was marked "Defendants' Exhibit BB" in evidence.)

Mr. Aurich: Q. I show you a letter which has just been offered and received in evidence as Defendant's Exhibit BB. I will ask you to state if that is the letter which you wrote to Mr. Ruddle advising him of the results of your tests on the sand and your tests on the emulsion, and the results of your conclusions as to the ratio of emulsion and sand that he should use in his cores? A. It is.

Mr. Aurich: For the Court's information I might state that the letter just sets forth in tabular form the results of the sieve test on the sand; it reports the result of the test of the two emulsions as being substantially identical; and the two concluding sentences I would like to read, if I will not take too much time. The concluding two sentences are these:

"It is felt that as long as the emulsion will satisfactorily mix with your solution without coagulation or separation, the final consistency of the core is definitely a function of the percentage of solution-emulsion mixture to the

(Testimony of John F. McSwain.)

sand. We shall be glad to assist you further as you may require."

Signed by the Shell Oil Company.

Q. I believe that you have mentioned that at some time following your visit to the Macauley Foundry you assigned Mr. Waller to the [292] task of working with Mr. Ruddle? A. Yes. [293]

Q. What was your purpose in assigning Mr. Waller to work with Mr. Ruddle?

A. Well, Ruddle had stated that he couldn't understand what caused the differences in the cores; that apparently they would be handled in exactly the same way, but some cores would be what he said were good and some would be what he said were bad, but that as far as he could tell he did things in exactly the same way. And Waller has a characteristic which we considered very valuable: He has a very keen observation. And for that reason we assigned him to this task, in the hope that he might observe something in Ruddle's technique that Ruddle wasn't aware of.

Q. Do you know what Mr. Waller's experience in the foundry art had been prior to the date he was given this assignment?

A. As far as I know, it was about equal to mine.

Q. And that was——? A. Nil.

Q. Can you give us the approximate time when Mr. Waller was assigned to work with Mr. Ruddle in this matter?

(Testimony of John F. McSwain.)

A. Well, I think it was a couple of weeks after our visit to the Macauley Foundry.

Mr. Aurich: Mr. Hackley has stipulated that this letter that I have in my hand may be admitted without objection. I would like to merely identify it. It is a copy of a letter dated January 25, 1938, from Head Office Sales, I believe, to Manufacturing at Martinez (showing document to witness)——

The Witness: Yes.

Mr. Aurich: An inter-office communication, so to speak, of the Shell Oil Company, and while it states that the original was signed by R. T. Collier, this witness' initials appear in the lower left-hand corner. And while I don't want to be in the position of testifying, I understand from this witness that at the [293] date this letter was sent, certain persons only in the Shell organization signed certain letters, and on the pink or carbon copy, in the lower left-hand corner, appeared the initials of the person who wrote them.

Q. Is that correct, Mr. McSwain?

A. That is correct.

Q. And these initials which appear in the lower left-hand corner are your initials?

A. That is correct.

Mr. Hackley: The witness actually wrote the original of that letter; is that correct?

Mr. Aurich: That is correct.

I ask that the letter which I have thus identified be offered and received in evidence as Defendants' Exhibit CC.

(Testimony of John F. McSwain.)

(The letter referred to was marked Defendants' Exhibit CC in evidence.)

Mr. Aurich: Q. By means of this letter, Defendants' Exhibit CC, can you give us any more definite information as to when Mr. Waller was given the task to which you have referred a moment ago, namely, of acting as observer of Mr. Ruddle's work?

A. Well, as I recall it——

Q. I will show you the letter, Mr. McSwain.

A. I would say that this—I am not sure of the question.

Q. The question simply is this: Mr. McSwain, can you, from that letter, give us any more definite date when Mr. Waller was assigned to act as observer of Mr. Ruddle's work?

A. I would say it was shortly after January 25, the date of this letter.

Q. 1938? A. 1938.

Q. Do you know whether or not the conclusion that had been arrived at between you and Mr. Waller and Mr. Harsch that this problem that Mr. Ruddle was encountering was one that could be solved by [294] varying the mixtures of solution and emulsion to sand, was correct?

A. Well, it developed that it was not correct.

Q. Following that what, if anything, was done by the Shell Oil Company to endeavor to find out the real cause of the difficulty?

A. Well, in the work—let me put it this way: Waller was assigned to work with Ruddle, and as I

(Testimony of John F. McSwain.)

recall it they did some work at the Vulcan Foundry; that is, Ruddle fixing the cores, and then the cores were taken to Martinez where we had a man by the name of Spotswood working in the laboratory, and he had been assigned and worked on this problem also, and the cores were baked in an oven at the Martinez laboratory.

Q. Well, what was the purpose of having Mr. Spotswood assigned to do this work? What was he supposed to do?

A. Well, he was supposed to find out, if he could, what the cause of this difficulty was.

Q. Can you identify Mr. Spotswood for us, please?

A. Mr. Spotswood is a mechanical engineer employed at the Martinez Refinery on what is known as technical applications.

Q. That is what we find in some of the reports that have been offered in evidence identified by the initials TAC?

A. TAC stands for technical applications committee.

Q. Does the letter, Defendants' Exhibit CC, assist you in any way in fixing the time at which Mr. Spotswood was assigned to the task of finding this one difficulty that Mr. Ruddle had mentioned to you?

A. If I take long reading this—I have had some difficulty with my eyes, that it takes me a little while to find things.

Mr. Aurich: I might say to the Court, the witness has been ill.

(Testimony of John F. McSwain.)

The Court: There is no question about this letter, is there?

Mr. Aurich: No. I am merely asking him to fix the date. [295]

Q. The letter is dated January 25, 1938, Mr. McSwain? A. That is right.

Q. Was it about that time that Mr. Spotswood was assigned——

A. Mr. Spotswood was assigned to that work.

Mr. Hackley: You can read the portion of the letter you have in mind; I have no objection.

Mr. Aurich: I am sure I couldn't even tell you what portion it is. The witness would have to——

Mr. Hackley: It is about the second or third paragraph.

Mr. Aurich: That is right; thank you.

Q. Do you know anything of your own knowledge about the work that was carried on at the asphalt laboratory at Martinez by Mr. Spotswood?

A. Well, I know those things that have been reported to me.

Q. You were never there when any of the tests were made, were you?

A. I don't recall that I ever was.

Q. Do you recall whether or not Mr. Spotswood, or anyone at the asphalt laboratory at Martinez, was ever successful in finding out the cause of one difficulty mentioned by Mr. Ruddle? A. Yes.

Q. How was that information conveyed to you?

A. Well, as I recall, it was conveyed to me by

(Testimony of John F. McSwain.)

word of mouth; I don't remember whether it was Spotswood told me, or some of the men in the office.

Q. By the way, Mr. McSwain, are you familiar with technical application committee reports?

A. I have put my initials on a lot of them.

Q. Do they come to you in the regular and ordinary course of events?

A. Those of them referring to matters handled by my department do.

Q. Do you recall whether or not there was a technical application committee report with respect to this alleged difficulty mentioned by Mr. Ruddle?

A. I don't recall the report, but I am very [296] sure that there was.

Q. You paid no attention to it, in general at least, or in detail?

A. No.

Q. Following the visit that you made to the Macauley Foundry on the occasion that you were there with Mr. Ruddle, Mr. Waller, and Mr. Harsch, will you state whether or not the Shell Company immediately decided that it would conduct experiments at the Vulcan Foundry in an endeavor to assist Mr. Ruddle in finding out the cause of the one difficulty which he had referred to?

A. Well, I don't recall that we did decide immediately. There was probably some period in there when we discussed the matter.

Q. Taking the period of time roughly now, from your visit to the Macauley Foundry, which for the purposes of identification we shall fix as the latter part of December, 1937, and taking as your other

(Testimony of John F. McSwain.)

limit of time that Mr. Spotswood discovered what was causing the softening of the cores, did you have any conversations with Mr. Ruddle? A. Yes.

Q. That would be roughly between the period, let us say, of December, 1937, and the latter part of February, 1938; is that right? A. Yes.

Q. Can you at this time recall any specific conversation that you had with Mr. Ruddle during that period of time?

A. We had a number of—a good many conversations, I would say. The only one that I recall specifically was his bringing over a letter—Peck may have been with him—from some Foundry Magazine, setting forth the quantities of core oil which they thought were used in the United States in the course of a year.

Q. Can you tell us with respect to this interval of time when this conversation occurred?

A. Oh, I couldn't say. It was sometime after Ruddle's first visit, but I don't recall just how [297] soon.

Q. It was prior to the discovery of the cause of the softening of the cores? A. Yes.

Q. You believe Mr. Lydell Peck was there?

A. Well, it seems to me that he was, but I couldn't be positive.

Q. Where was this conversation?

A. In my office.

Q. Will you tell us as nearly as you can now recollect what was said by the various parties to

(Testimony of John F. McSwain.)

that conversation? And before you answer, you might include in there statements made by anyone other than the individuals you have named, if anyone else was present.

A. The only—you are referring to the visit when I was shown this letter?

Q. That is right.

A. Well, so far as I recall, they and I were the only ones that were present. It is possible that some of the boys might have stepped in, although I have no recollection of it.

Q. At least, if anybody else stepped in, they took no active part in the conversation?

A. I think not, no.

Q. Will you please go on and tell us as nearly as you can recall what was said by the various parties that were there?

A. Well, it was pointed out by Ruddle that these people had estimated that there were some 23,000,000, or 23,500,000 gallons of core oil—linseed oil—used in the United States in the course of a year—that is, used for foundry purposes; and making a calculation based upon the ratio that they thought would have to be used—the ratio of their oil that would have to be used to give the same result as linseed oil, they thought that there was, I think, something like 75,000,000 gallons; maybe it was 100,000,000 gallons; that would have to be used in the course of a year, of Core-Min-Oil.

Q. What percentage of that 75,000,000 or 100,-

(Testimony of John F. McSwain.)

000,000 gallons per [298] year would be asphalt emulsion? Was that discussed, do you know?

A. Yes. It seems to me it was about a third; it was either a third or a fourth—a third, I believe.

Q. Do you recall anything else that occurred, or that was said at this conversation, or is that the best that you can recollect at the present time?

A. As I recall, that was the gist of the conversation. There was probably more said I can't recall.

Q. Prior to this conversation, Mr. McSwain, had you or anyone connected with the Shell Oil Company, in so far as your knowledge is concerned, made any survey to determine the core oil market in the United States? A. We had not.

Q. Prior to this conversation with Mr. Ruddle, and possibly Mr. Peck, had you any idea or knowledge at all of what the total gallonage of core oils was that was sold for core oil purposes?

A. Not the slightest.

Q. At the time of this visit, when Mr. Ruddle and Mr. Peck were telling you about this 23,500,000 gallons, did you have any knowledge as to how much linseed oil was sold for core oil purposes in the United States? A. None whatever.

Q. Do you recall any conversation with Mr. Ruddle at any time wherein he disclosed to you any of the ingredients of his Core-Min-Oil, confining your testimony now to the period of time prior to the date of the contract?

A. Any of the ingredients, did you say? [299]

Q. That is right.

(Testimony of John F. McSwain.)

A. Yes, he told me at the time of his first visit that it contained asphalt emulsion and his secret solution, and I believe sodium silicate. I can't be positive whether he told me at that first meeting, or whether it was one of the meetings shortly after that.

Q. But in any event, at some time prior to the date the contract was signed, Mr. Ruddle had told you that he used an asphalt emulsion and a secret solution, and also told you that one of the ingredients of the secret solution was sodium silicate?

A. Yes.

Q. Do you recall approximately the time when active negotiations for the contract here in question were commenced?

A. It was sometime subsequent to Spotswood's determination of the effect of CO₂ gas on core oil.

Q. That would be sometime subsequent to let us say February 24, 1938, as shown on TAC report 79, Plaintiffs' Exhibit No. 3, in which Mr. Spotswood reports the results of his work in an endeavor to find out what was causing Mr. Ruddle's difficulty with his cores?

A. Yes.

Q. Can you give me any estimate of how long a period of time after February 24, 1938 it was before the active negotiations for the contract were commenced; just roughly, please?

A. Oh, it might have been a week; it might have been ten days.

Q. Now, between this whole interval of time,—

(Testimony of John F. McSwain.)

let us say roughly from January 1, 1938 or late in December 1937,—to the time when active negotiations for the contract were commenced, did you have many or few discussions with Mr. Ruddle and Mr. Peck, or Mr. Ruddle or Mr. Peck?

A. We had a good many discussions.

Q. With whom were the majority of the discussions had, Mr. [300] Ruddle or Mr. Peck?

A. Mr. Ruddle.

Q. Does any one particular conference or conversation or visit stand out in your mind so that you can tell us about it, outside of this one that you have referred to when they told you the number of gallons of linseed oil that was sold on the market?

A. That, and the first interview, are the only ones that I recall.

Q. Can you recall in that interval of time, without regard to any specific interview, what was said generally by you and what was said by Mr. Ruddle and by Mr. Peck? And please fix these times as nearly as you can and the places, as nearly as you can.

A. I missed the first part of the question.

(Question read.)

Mr. Hackley: This is up to the start of the contract negotiations?

Mr. Aurich: That is right; up until the active negotiations for the contract were commenced.

Mr. Hackley: Which I would estimate from the way he has testified would be about March 1.

(Testimony of John F. McSwain.)

Mr. Aurich: It would be around there somewhere.

The Witness: Around there. You want me to tell you what happened at any other interviews than these first two we have talked about?

Mr. Aurich: Q. No. I want you to tell me, without regard to any particular interviews other than those two, what happened, without fixing the particular interviews, unless you can.

A. Generally, what was being said by Mr. Ruddle—oh, well, at all of these interviews Ruddle talked about the superior qualities of his core oil; pointed out the various advantages; gave me a sheet of paper in which various [301] advantages were listed. And in fact every interview that we had was one in which he repeatedly referred to the advantages that his core oil would have as compared with linseed oil.

Q. At any time during these conversations did he mention to you any difficulties that he had encountered with his core oil other than the one that we have already referred to?

A. No, as I recall it, that was the difficulty.

Q. In one of your previous answers you mentioned a sheet which you said Mr. Ruddle gave you. Will you tell us a little bit about that, please?

A. Well, it was—in what way? What do you mean about it?

Q. Well, can you describe it?

A. As I recall it, it was a piece of—a legal size sheet or letter size sheet, typewritten, or which vari-

(Testimony of John F. McSwain.)

ous advantages resulting—were set forth for his core oil.

Q. I now show you a document which has been marked Defendants' Exhibit T for identification, and ask you if you can identify that document, and if so, will you state what it is?

A. This looks very much like the document—I think it is on different paper, as I recall it. Well, I don't know whether it was on a perforated sheet or not.

Q. Well, do you know where you got the document Defendants' Exhibit T?

A. It was given to me by Mr. Ruddie.

Q. Is that the sheet that you referred to in which it set forth the alleged advantages of Core-Min-Oil that you referred to? A. Yes, sir.

Mr. Aurich: If the Court please, the Clerk advises me that Defendants' Exhibit T is already in evidence, but I believe that was withdrawn when I withdrew the deposition of Mr. Ruddie this morning, because I had offered that in connection with it. [302] At this time I would like to offer this document in evidence as Defendants' Exhibit T.

The Court: Let it be marked.

Mr. Aurich: I will endeavor to fix the time when it was handed to the witness a little more closely.

Mr. Hackley: On that point, I think you withdrew Exhibits T and U at the same time.

Mr. Aurich: R and T.

Mr. Hackley: Whatever it was; the two of them annexed to the deposition.

(Testimony of John F. McSwain.)

Mr. Aurich: Q. Can you fix any more definitely than you have, Mr. McSwain, the time when this document Defendants' Exhibit T was handed to you?

A. No, I can't. It was handed to me, as I recall it, shortly after Ruddle's first visit, but the exact date I can't be sure of.

Q. Is Defendants' Exhibit T a copy of the document he handed to you, or did he hand you that particular sheet of paper Defendants' Exhibit T as it now stands?

A. Well, I believe that is a copy, although I wouldn't be very positive about it.

Q. Your recollection isn't sufficient——

A. My recollection is it was a sheet foolscap size, something of that sort.

Mr. Aurich: For your Honor's information, I will state briefly that this document lists roughly eight claimed advantages for Core-Min-Oil, and I may be able to enumerate them very, very briefly.

Mr. Hackley: Do you offer that document?

Mr. Aurich: Yes, I have offered it.

Mr. Hackley: In the light of the testimony of the witness who is unable to identify it, I object to it as having no proper [303] foundation laid and not properly identified.

Mr. Aurich: I will try to lay a further foundation, if your Honor feels it is necessary.

Q. I call your attention to the first paragraph of that document, and ask you to state where you got that information that is contained in it.

(Testimony of John F. McSwain.)

A. What do you mean where I got the information?

Q. What information is there set forth—did you get that information from anybody?

A. Yes.

Q. From whom? A. From Ruddle.

Q. How about paragraph 2?

Mr. Hackley: I object, your Honor, to him testifying from a document until it is properly identified.

Mr. Aurich: I can't identify it until I show it to him.

Mr. Hackley: If the witness can recognize it, that is one thing. So far he has said he can't recognize it. He thinks it was a different kind of paper; he doesn't know whether the contents are the same.

Mr. Aurich: I will put the question directly to the witness:

Q. Can you identify that document which you have in your hand, which has been marked Defendants' Exhibit T? If you can, will you tell us what it is, please? If you can't, say so.

A. I can't identify this sheet of paper; I can identify, I think, the contents.

Mr. Aurich: I will withdraw the offer.

Q. Do you recall whether or not at any time Mr. Ruddle made any representations to you about the suitability for general foundry use of his Core-Min-Oil in making cores? A. He did.

Q. Will you tell me what he said in that regard? Fix the time and place of the conversation, please, as best you can. [304]

(Testimony of John F. McSwain.)

A. I would say that these conversations were in my office and during the early—shortly after his first visit, during the frequent visits that were made to my office between his first visit and the time that we entered into a contract. He stated that the use of his core oil would result in a very large reduction in the consumption of fuel; due to the fact that his core oil would not permit burning in there would be a very large saving in castings; that due to the—when his core oil was used a very porous core was secured, which prevented gassing and the formation of gas bubbles in the casting; that you got a much stronger core using his core oil. Well, there were quite a number more claims that he made; I can't recall them at this moment.

Q. Will you state whether or not at any time in your conversations with Mr. Ruddle he indicated to you his apprehension that a large corporation might obtain knowledge of his so-called secret solution and thus deprive him of any benefits that he might otherwise receive from it? A. He did.

Q. Will you tell us what he said in that regard?

A. Well, I can't quote his exact words, but he very frequently voiced his fear that he would be done out of his idea.

Q. And what was your reply to Mr. Ruddle's remarks in that connection?

A. Well, at that time I am not sure that I made any reply. You are referring to the period up to the time of the negotiations for the contract?

(Testimony of John F. McSwain.)

Q. Let me get at it this way, Mr. McSwain: When was the first time that Mr. Ruddle indicated to you his apprehension that you have mentioned?

A. Well, I would say that it would probably be—I would say that it was the first visit, and very frequently at subsequent visits. [305]

Q. What did you reply to his statements of that character?

A. Well, my general reply was to the effect that—and this was repeated many times—that as far as we were concerned, our company was honest, and in our dealings with him, if we had any, we would be honest. Those——

Q. Go ahead.

A. That is all right.

Q. Do you recall in any of your conversations with Mr. Ruddle prior to the active negotiations for the contract that anything was said about any patent applications on Mr. Ruddle's core oils that he might then have had pending?

A. I believe that he said he had patent applications pending; in fact, I know he did.

Q. Now, prior to the time of the discovery by Mr. Spotswood of the difficulty caused by the presence of CO₂ gas, had you had any discussions with Mr. Ruddle or Mr. Peck relative to entering into a contract with them regarding the manufacture or sale of Core-Min-Oil?

A. I don't recall any discussions prior to that time.

Q. Did the Shell Company ever entertain the idea of marketing and selling Mr. Ruddle's core oil?

(Testimony of John F. McSwain.)

A. Did we?

Q. Yes. A. Ever?

A. It did.

Mr. Aurich: Q. Who in the Shell Company was responsible for that, or who first entertained that notion?

A. I believe that I did.

Q. Now, can you tell us briefly the occasion of your entertaining that notion or undertaking the thought of the Shell Company's engaging in the marketing and sale of a core oil after the [306] discovery by Mr. Spotswood?

A. Well, subsequent to the Spotswood discovery of what Ruddell said was his only difficulty, it occurred to me that we, as a result of our efforts, had given this thing a value; as it was, we were going to be competing in the open market with whoever else might make the emulsion, and that the wise thing for us to do, in view of the fact that we had found the thing that caused all the difficulty, would be to enter into a contract with these people so that we would be in a better position to supply the emulsion that would be required.

Q. Do you recall at any time whether or not Mr. Ruddell ever mentioned to you any concerns that were interested in his core oil? A. Yes.

Q. When were those conversations and what was said?

A. Well, he told me that he had had dealings with the American Bitumuls Company. Apparently

(Testimony of John F. McSwain.)

those dealings were at a standstill, because he said they wanted too much, or wanted everything, or something of that sort. He also—he or Peck referred to the American Brake Shoe & Foundry Company as being quite anxious to get the use of this material. Peck particularly made frequent references to Mr. Collier, who at that time was vice-president of the Standard Oil Company, as being very much interested in this product. [307]

The Clerk: Peck v. Shell Oil Company on trial.

Mr. Hackley: Ready. It is my understanding, your Honor, that the plaintiffs' opening case will proceed at this time, and I will call Mr. Goth.

OTTO WILLIAM GOTH,

Called for the Plaintiffs; Sworn.

The Clerk: Please state your full name to the Court.

A. Otto William Goth.

Direct Examination

Mr. Hackley: Q. Will you state your full name, age, and residence address, please.

A. Otto William Goth, forty-five, 1515 Rose Street, Berkeley.

Q. What is your occupation?

A. Coremaker.

(Testimony of Otto William Goth.)

Q. How long have you been engaged in coremaking activities? A. Thirty-one years.

Q. By whom are you employed?

A. H. C. Macauley Foundry Company.

Q. Located where?

A. Sixth and Carlton Streets, Berkeley.

Q. What are generally your duties as a coremaker at Macauley Foundry at this time?

A. Making cores.

Q. Are you in charge of the department or just another one of the men?

A. Just one of the men.

Q. You have been with H. C. Macauley Company how long? A. Thirty-one years.

Q. All of the time you have worked with coremaking?

A. Just with the exception of four months when I was in the hospital, when I was hurt. [308]

Q. Were you working for H. C. Macauley Company in 1937, '38 and '39? A. Yes.

Q. Are you acquainted with Allan B. Ruddie, one of the parties to this action? A. Yes.

Q. How long have you known Mr. Ruddie?

A. I met him in the latter part of 1937.

Q. In what connection?

A. When he came in with that oil that he had.

Q. What do you refer to as "that oil that he had"?

A. That solution that he had for making cores.

Q. A core oil? A. Yes.

(Testimony of Otto William Goth.)

Q. Will you tell us just what you know about Mr. Ruddie's work with the Macauley Foundry when he first came in?

A. Well, when he first came in with this, it was experimental. The foreman—rather, the superintendent was the man who brought him down to me and told me he wanted to make some experiments.

Q. What is the name of the superintendent?

A. Olson.

Q. With H. C. Macauley?

A. Yes. He isn't there any more.

Q. Continue, if you will, please.

A. And so he brought this Mr. Ruddie down to me and explained that he wanted me to make some experiments with him, wanted me to do the work. So I asked him what he wanted to do, so he showed it to me. He said, "It is not exactly an oil"—the foreman said this—he said, "We are going to work in chemicals." He said, "I want you to experiment with it," and he said, "I don't know nothing about it; none of us know nothing about it. What I want you to do is try it out."

Q. Go right ahead.

A. Then we started out to make the experiments with it, making different cores, and first, I had an awful lot of trouble with it. I couldn't get it to work [309] right, that is, to dry.

Q. What kind of a core oil was this?

A. When he first came in, Mr. Ruddie had a mineral oil with a solution that he was using, and

(Testimony of Otto William Goth.)

by using these we couldn't get it to dry; we couldn't get it to work that way like the ordinary oil would work.

Q. How long did you continue working in this initial stage with the oils?

A. Oh, close to four months.

Q. Up to about what time?

A. The latter part of 1937, about October, I think, something like that.

Q. Then what took place?

A. Then we found that by casting—we got some castings made with this mineral oil and we couldn't get it out of the castings, so we explained to Mr. Ruddle he would have to get something else to work the solution in order to burn the core away. With the solution the way it was we couldn't burn it away.

Q. Did he develop any other oil and bring it to you?

A. He brought some asphalt, then he made his mixtures with the asphalt.

Q. Using the asphalt instead of the mineral oil?

A. Yes, that took the place of the mineral oil.

Q. Did he still use this chemical you spoke of?

A. Yes, the chemical and the asphalt.

Q. Did Mr. Ruddle ever tell you what that chemical was? A. No.

Q. What did it look like, do you remember?

A. It looks like—a light yellowish cream color, I would say, like water.

(Testimony of Otto William Goth.)

Q. It is a liquid, is it? A. A liquid, yes.

Q. Rather a thin liquid, something of that sort?

A. Yes.

Q. And then you started to make cores, if I understand, with the asphalt? A. Yes. [310]

Q. And this solution? A. Yes.

Q. Did you yourself make cores with it?

A. Quite a number of them.

Q. And you would fix the date as to when you started that as what?

A. I don't know the date I started.

Q. Well, approximately, in time. Was this still in 1937? A. 1937, yes.

Q. About what part of the year?

A. I would have to guess. I would say about October.

Q. In the latter part of the year?

A. Yes.

Q. Who made the solution that Mr. Ruddle gave to you? Did you make it, or did he just supply it? A. He brought it in himself.

Q. And did he bring in the asphalt too?

A. Yes.

Q. Do you know anything about that asphalt, what kind of asphalt it was?

A. No, just that I heard him say it was emulsified, that is all.

Q. Did he tell you it was emulsified asphalt?

A. Yes.

Q. Did he say anything about it to you?

(Testimony of Otto William Goth.)

A. No.

Q. That is, he didn't describe its constituents or anything? A. No.

Q. Can you tell us whether or not Mr. Ruddie said anything about discussing the ingredients of his core oil with other people?

Mr. Aurich: Same objection. [311]

The Court: Objection sustained.

Mr. Hackley: I asked the witness, your Honor, to state whether or not it occurred.

The Court: It is leading and suggestive.

Mr. Hackley: Pardon me, your Honor.

Q. Mr. Goth, did Mr. Ruddie say anything about that core oil or its constituents other than what you have told us, that is, that he named it to you as asphalt?

A. No, he said it was asphalt.

Q. What did you do with the asphalt core oil that he described to you?

A. He did all the mixing himself.

Q. What do you mean by that exactly?

A. What he used was sand and solution and then his asphalt, and he made the mixture for us. All I was supposed to do was just make the cores and try them out.

Q. Did you ever do that? A. Oh, yes.

Q. At that time, in the latter part of 1937?

A. Yes.

Q. Tell us about the cores that you made, what kind of cores they were, and how they worked.

(Testimony of Otto William Goth.)

A. The cores came out of the box nice; they didn't stick or anything, but the trouble I had was drying the cores, the same as I had with the other oil, the mineral oil; I couldn't dry them. I said to quite a number of the different fellows that came in there, I said, "This stuff will work all right, but it won't work with open flame gas," and most of them laughed at me.

Q. You say most of them laughed at you?

A. The different fellows. Mr. Ruddie had quite a few different men that always used to come to look at the cores that we made there.

Q. Did you ever make any successful cores with this core oil? A. Oh, yes. [312]

Q. Under what circumstances did you make successful cores?

A. Well, the way I operated, I ran all the other—my work—I used to run until three o'clock, then maybe at about twenty after three or half past I used to shut the oven off, turn off both valves on the oven, shut off as much gas as I could, then in the meantime I would make the cores, then about four-fifteen or four-ten I would put Mr. Ruddie's cores in the oven. In one hour it would drop down from about 550 to about 150 degrees, and that way I was able to make the core, with no fire in the oven.

Q. And how did they come out when you worked that way? A. Came out all right.

Q. What would you say, as a coremaker, was the kind of a core that was produced by this product?

(Testimony of Otto William Goth.)

A. I think Mr. Ruddle's was a good core.

Q. What did it look like in comparison, say, with other cores? A. It was smoother.

Q. What kind of core oil were you using in 1937 in the Macauley plant?

A. Using Houghton.

Q. How did Mr. Ruddle's cores compare with those made with Houghton oil?

A. Practically the same thing.

Q. Were any of the Ruddle cores ever used to make castings? A. Oh, yes, lots of them.

Q. Did you see the castings after they were made? A. Oh, yes.

Q. What kind of castings came off the Ruddle cores? A. Good castings.

Q. Have you any samples of cores made with the Ruddle product? A. Yes.

Q. And have you them here in the courtroom?

A. Yes.

Q. I will show you a core and ask you if you can identify it. [313] A. Yes.

Q. What is that?

A. That is Ruddle's core.

Q. When was that made?

Mr. Aurich: I object to this line of examination, your Honor, in that this core is evidently made by someone out of the presence of defendants, and as a result of ex parte tests to which the defendants were not invited, nor were any of their representatives.

(Testimony of Otto William Goth.)

Mr. Hackley: These are not in the nature of tests, merely to illustrate the witness' testimony of what he refers to as a Ruddle core, and he will describe the making of that core, I assume.

The Court: The objection will be sustained.

Mr. Hackley: Q. Did you make the core that you have shown here yourself?

A. Those cores there?

Q. Or was it made under your direction?

A. Made under my direction—I didn't make those cores, no.

Q. Was it made under your direction?

Mr. Aurich: The same objection.

Mr. Hackley: I just want to identify it, and I will offer it for identification.

The Court: You might identify it.

The Witness: No, I didn't make the core.

The Court: Q. Who made it?

A. The other man sitting down at the end there.

Mr. Hackley: Q. What?

A. Antonio, sitting on the end.

The Court: Q. The men sitting in the courtroom with you?

A. Yes.

Mr. Hackley: Q. Did he make it under your direction, Mr. Goth?

A. Yes. [314]

Q. You were present when he was making the core, were you? A. Yes.

Q. Does this core that you have shown here illustrate what you mean by a Ruddle core?

(Testimony of Otto William Goth.)

A. Yes——

Mr. Aurich: Same objection, your Honor.

Mr. Hackley: Again, I offer the core identified by the witness, purely to identify his testimony.

The Court: For what purpose?

Mr. Hackley: To illustrate his testimony.

The Court: Illustrate it in what manner?

Mr. Hackley: That that is a core made by him.

The Court: Assuming that it is the core, what about it?

Mr. Hackley: That it is a sample of a Ruddle core.

The Court: All right, supposing it is a sample, what about it?

Mr. Hackley: We propose to show with the cores that we have here that the Ruddle core will, under test, make a satisfactory core for all purposes. This witness' testimony will continue from this point and go to that end, that it will meet all the requirements of a good foundry core. We will show through this witness, and illustrate his testimony with the cores he has made, precisely what he means by a good foundry core and a good core.

The Court: What do you mean by "a good foundry core"?

The Witness: That means a core so far as it is—smooth, and it won't blow or won't scatter. Some of them was made with blackening and some of them was made without blackening——

Mr. Aurich: So far as my objection is con-

(Testimony of Otto William Goth.)

cerned, your Honor, if counsel wants to use ex parte tests in this manner, I will have no objection provided defendants are going to be [315] afforded the same opportunity.

Mr. Hackley: So far as that is concerned, I don't want to call this a test. This is not a test; this is something this witness has made to illustrate what he is talking about, your Honor. So far as tests are concerned, if we want to perform tests in this case I think they should be inter partes tests, and I will make an offer to make those tests if you wish, Mr. Aurich.

Mr. Aurich: Whether you call it tests or what you call it, the result is the same. Here is a core made out of the presence of the defendants at an operation during which the defendants had no opportunity to be present and observe the making. My objection is that it is an ex parte occurrence. Now, if you want to waive that objection and admit that both sides can do the same thing, I have no objection, I will be glad to waive my objection; otherwise I will stand on it.

Mr. Hackley: So far as tests are concerned, your Honor, I agree with counsel that ex parte tests have no presence in a case of this character; that they are much more satisfactory and more generally received only if they are inter partes tests. In this case I have offered this core only as illustrative of the witness' testimony of what he himself has done with his own hands or under his own direction.

(Testimony of Otto William Goth.)

The Court: You may develop the facts through the witness.

Mr. Hackley: Q. Have you ever made any cores yourself, personally, with the Ruddle solution? A. Yes.

Mr. Aurich: I object to that and move to strike the answer on the ground this witness does not know what Ruddle solution is.

Mr. Hackley: He has described what he has called the [316] Ruddle product, the Ruddle solution——

Mr. Aurich: I would like to have him tell me at this stage of the proceeding what the Ruddle solution is, right now.

Mr. Hackley: I don't know, but this witness says——

The Court: I am expected to know what it is, and I don't know any more about it after three days than the first day I started; isn't that interesting? Let the record show that. Proceed now, gentlemen.

Mr. Hackley: Q. Mr. Goth, you have testified that you have made cores with the product which Mr. Ruddle brought in. You stated that that product was composed of an asphalt emulsion, is that correct? A. Yes.

Q. And a solution which he produced?

A. Yes.

Q. Did you know the constituents of that solution yourself? A. No.

(Testimony of Otto William Goth.)

Q. All you knew about it was what you described a moment ago, that it was a thin, yellow liquid? A. Yes.

Q. Something like water? A. Yes.

Q. You never have had any more information than that about it, have you? A. No.

Q. Just what did you do when you made cores with that product—what do you call that, Ruddle's product, or Ruddle's oil, or what?

A. Ruddle—that is all I knew it by, Ruddle's solution. That is the only name I ever used for it.

Q. The name you used here a few moments ago in your testimony? A. Yes.

Q. Now, you say the Ruddle solution is the asphalt emulsion and this liquid Mr. Ruddle brought in? A. Yes.

Q. Those two together made a core oil, is that correct? A. Yes. [317]

Q. You used those to make cores?

A. Right.

Q. Now, will you describe just what you did yourself to make cores with Ruddle's product?

A. Mr. Ruddle himself, he did all the mixing.

Q. That is, he mixed the asphalt—

A. He did all the mixing himself.

Q. Tell us just what he did if he did it in your presence.

A. He took—say, for instance, he had three riddles there, whatever the job called for—I would tell him, "Make two riddles, make three, make

(Testimony of Otto William Goth.)

four”—how much I needed for the class of work I was making.

Q. Riddles full of what?

A. Of sand, to get ready to make the core, and he would do his own mixing and everything, and when he would have it all ready he would tell me. He was working at the opposite bench from me. He said, “I have got the oil ready”, and I would—if I was making a Union cylinder head or a Hall-Scott head or Jackson Series pumps, deep well pumps, and lots of other different things we had there——

Q. Did you see Mr. Ruddie at any time mixing the sand with these products?

A. Oh, yes, always seen him mix it.

Q. How did he go about mixing it?

A. He would take all the sand on the bench—he had a special bench for that, a bench about twelve feet long, and he put all the sand up there and put the solution in the riddle, then he would have the riddle on this side and then he would have the riddle back on the other side (indicating).

Q. What do you mean by the riddle——

A. Shake them through the select sieve.

Q. Continue.

A. Then he would ask me to feel it, and I would feel the texture; I could feel if it was wet or dry [318] enough. He pretty nearly always had it right, the right texture for it. Then I would make the core for whatever I would make, either cylinder head—might be making a pump—whatever the

(Testimony of Otto William Goth.)

superintendent told me to make that night. I always done that work after half past three.

Q. Did you see him mix these liquids from asphalt emulsion and the other solution or liquid?

A. Yes, I did.

Q. What order did he mix those in? Did he put them in together or separately, or how?

A. First he put in the emulsion, then he put in this asphalt.

Q. Did he first stir sand up with the solution?

A. He stirred up the sand first, then he put in his asphalt, then he would mix them together.

Q. Then you would use the product which he made up that day on the core sand? A. Yes.

Q. And to make cores, is that correct?

A. That is right.

Q. This was all in the latter part of 1937, is that correct? A. Yes, 1937.

Q. At that time that you described, how did the core sand and Ruddle work to make cores? Will you describe just how it worked, particularly in comparison with other core sands that you know of?

A. Well, with the other core sand in the ovens I would have to use 550 degrees of heat.

Q. Which core sand is that?

A. That is the Houghton oil; that is the oil sand. But when I worked with Mr. Ruddle before, I had to cut the fires off completely; I couldn't use no fire with it, because if I used the gas flame in the oven it wouldn't work. In other words, it would

(Testimony of Otto William Goth.)

just crumble away, like. Now, after the oven was shut off, say, for forty-five minutes, then I put this core in for only half an hour—twenty minutes to [319] half an hour and the core would be dry, with no fire.

Q. How did the Ruddle core sand act in the core boxes? A. Come out nice and smooth.

Q. Did it stick to the box? A. No. [319A]

Q. Did you ever have any trouble with that?

A. No.

Q. How many cores did you make with Ruddle's core sand over the period of months he was in there? I am referring now to this last product you described.

A. Well, I made so many different things—I made gates out of it, made handle cores—all kinds of things.

Q. All kinds of jobs? A. Yes.

Q. How about size? How large were the cores that you made?

A. The cylinder heads were about that long (indicating).

Q. How long is that in feet?

A. The exact measurement would be about three feet four inches, the size I was making at that time.

Q. How thick is that core?

A. Those cores vary; one place there is six inches, maybe, of sand, and another place four inches of sand.

Q. Did you make the cores for those heads out of Ruddle Solution? A. Yes.

(Testimony of Otto William Goth.)

Q. You understand when I say "Ruddle Solution," I am referring to the two products he has mentioned here. A. Yes.

Q. That is, the asphalt and the liquid, is that correct? A. Yes.

Q. What kind of cores did those make?

A. Made a very good core.

Q. How did they compare with the Houghton Oil cores that you make?

A. About the same thing.

Q. Did you make Houghton Oil cores for those large cylinder heads, Hall-Scott cylinder heads?

A. Yes; those are made in the morning, and use those boxes at night again. You see, I tried that sand on aluminum boxes and I tried it in aluminum driers. Then I tried it in redwood boxes, mahogany boxes, some painted, some unpainted, some shel-lacked, and some other things we have there. [320]

Q. You are referring to the Ruddle product?

A. Yes.

Q. How did it work under those conditions?

A. It worked all right.

Q. That was on these large heads. How did the Ruddle product work on small articles?

A. It worked the same way. You see, I will have to explain something to you again now. With the Houghton Oil, when we make a cylinder head, we use maybe three different kinds of sand—stronger, weaker, and stronger at different points. But the Duddle sand, we use the straight sand all the way through.

(Testimony of Otto William Goth.)

Q. Just use the one kind of sand?

A. Yes, all the way through.

Q. And, as I understand, you got as good a product with the Ruddle Solution?

A. Yes; those were all test articles.

Q. Were castings poured with those cores you have just mentioned?

A. Oh, yes.

Q. And how did those castings come out?

A. They were all right.

Q. Did you examine them?

A. Yes, we broke them up and everything else, to see how the jackets were inside, and everything.

Q. How were they?

A. All right.

Q. What do you mean by "All right"?

A. All right means there were no burning spots in them, no blowholes.

Q. Have you any estimate of how many cores you made altogether with the Ruddle Solution or the Ruddle product over the period of those several months?

A. I made so many different ones, big ones and medium-sized ones, I wouldn't know exactly.

Q. No, but could you give us an estimate in number? Would it be a few, or a great many?

A. Quite a few; I made quite a few.

Q. What do you mean by "Quite a few," now? Can you tell us that? Five, ten, or what?

A. No. I can tell you on the [321] cylinder heads I made about, oh, eight, I guess—eight or ten. And then on the smaller ones—you see, there

(Testimony of Otto William Goth.)

was a $4\frac{3}{4}$ cylinder head; I made about six of that. And then another four-cylinder one, maybe about, say, six of them. And then on the Union Diesel, I made two, I think it was; and then I made hundreds of cores for handles out of it, gate cores, cake cores, cores made up to see how the solution worked through it, and everything else.

Q. How about the Ruddle core? How did the Ruddle core sand work?

A. It worked medium all the way through.

Q. Did it work as well as the Houghton core oil sand?

A. I guess it would. We make cores sometimes a foot square, about that high (indicating). We dry that in the oven, where in the Houghton we would have to back that up, that is, using sharp sand on the outside, so it wouldn't collapse and fall down; and on the Ruddle we eliminated all that. It had more body, like.

Q. The Ruddle product would stand by itself?

A. Yes.

Q. Were you present at any time after the castings were made when attempts were made to get the Ruddle core sand out of the casting?

A. I was on two occasions in the shipping room, where I helped to break up one of the castings to see how it was inside.

Q. How did the Ruddle product come out?

A. It came out all right.

Q. Did you have any trouble with it sticking in the casting? A. No.

(Testimony of Otto William Goth.)

Q. Did it work in that respect as well as the Houghton Oil sand?

A. Yes; it ran out just the same.

Q. Do you use the word "friable" in your foundry? A. No.

Q. You do not use that term at all?

A. No.

Q. What do you call this matter of sand coming out of the casting?

A. We just call it running out, that is all. [322]

Q. How did the Ruddell product run out of the casting, say, as compared with Houghton Oil?

A. Out of the cylinder head, do you mean?

Q. Yes. A. Ran out all right.

Q. Did you ever study the Ruddell sand with reference to its use on the bench, as to how long it would last or be workable on the bench?

A. Well, sometimes we have maybe a shovelfull or two left over.

Q. After an afternoon's work?

A. Yes. And all we do with our sand is cover it with a wet sack, that is all, and leave it there.

Q. You do that with your Houghton Oil sand?

A. Oh, yes.

Q. Could you use that sand again at a later time, the Ruddell sand? A. Yes, sure.

Q. How long could you permit it to stand covered over with a sack and still have it workable.

A. I never tried. I left it there at the most two days, and used it again maybe the day after.

Q. Did it work perfectly all right?

(Testimony of Otto William Goth.)

A. It worked all right, yes. See, those benches—I am right between two big ovens in there. There is one oven behind me about 11 feet, and another big oven right beside us there, and it is quite warm in there all day long, too.

Q. What effect does that have on sand?

A. That will affect to dry your sand up.

Q. But you do not, if I understand you, have any trouble with that on Ruddle's sand?

A. No.

Q. If you cover it with a sack, is that right?

A. Yes; and, of course, if you left it out, it would do the same as the other sand; it would start to dry. [323]

Q. That happens with the Houghton sand, too, does it? A. Yes, it dries out.

Q. How is the strength of cores made with Ruddle's product, the cores that you made?

A. The cores were mixed about the same.

Q. Was it sufficient for core-making purposes?

A. Oh, yes.

Q. Mr. Goth, you have described these cores made with the Ruddle product as being strong enough for casting, is that correct? A. Correct.

Q. And you have described them as being able to be poured out of the casting after the casting had been poured, or run out, is that your phrase?

A. Yes.

Q. Perfectly all right. Are those the same cores, that is, in strength, that run out?

A. Just about the same.

(Testimony of Otto William Goth.)

Q. I do not know that I got this point over to you. I am trying to avoid leading you on the subject. But can you tell me this: Is a core which is strong enough to support the casting and to be used in pouring a casting, still able to run out of the casting after the casting is made?

A. Yes. Are you speaking of cylinder heads?

Q. Well, whatever it may be—cylinder heads. Say cylinder heads, yes.

A. All right. Yes. You mean the same strength and body [324] in the core?

Q. Yes. A. Yes, the same strength.

Q. And those cores pour, run out of the casting all right, do they?

A. The idea of it is, the sand has to burn away inside; that is the whole idea of it.

Q. Did that occur in the Ruddell cores?

A. Yes.

Q. This is the Ruddell core you are describing here? A. Yes.

Q. Did you ever have any trouble with the Ruddell product, other than the fact that you could not make them in the presence of the open gas, as you described?

A. No, that was the main trouble, was the drying.

Q. Did you have any other troubles?

A. No.

Q. I believe you said you made hundreds of cores over the period of time you have been in a foundry.

A. Lots of cores, yes.

(Testimony of Otto William Goth.)

Q. Over how many months did you work with the Ruddle product?

A. You mean from the beginning to the end?

Q. Yes.

A. I would say about eight months; maybe a few days less, maybe a few days over. I am not sure. That was on and off. That wasn't continuously, all the time. That was on and off during that period of eight months.

Q. If I understood you, you would work with that sand under the instructions of Mr. Olson?

A. Yes.

Q. And you did most of that work after your regular day's work was over?

A. After my regular day's work was through—half past two, three o'clock, sometimes I get through a little bit later—whenever I did I would work on that stuff.

Q. Did you ever have any trouble with the solutions of Ruddle, either the liquid or the asphalt itself, settling out of the product when it stood?

A. After the core was made?

Q. Yes.

A. No. I had that with the mineral oil. That is where [325] I had the trouble before, but he changed that.

Q. But not with the asphalt product?

A. No.

Q. Did you ever have any trouble with the cores, after they were made, absorbing moisture from the atmosphere? A. No.

(Testimony of Otto William Goth.)

Q. Did you ever have any cores lying around long enough to observe them?

A. I had about 60—no, close to 100 cores lying around a year and two months ago, and we had to make room, and we threw them all away. There was almost a hundred cores still laying there—different samples—gates, handle cores, and I forget what.

Q. What kind of condition were they in when you threw them away after a year and a half?

A. Just the same as when they were made. Of course, they were all covered with dust, but they were still there.

Q. Had they absorbed any moisture, that you could observe? A. No.

Q. Were those cores indoors or outdoors?

A. Indoors.

Q. Indoors? A. Indoors.

The Court: Get through with this witness.

Mr. Hackley: Q. Does this core which you have shown here a few moments ago illustrate what you mean by a good core made with the Ruddle product?

Mr. Aurich: The same objection, your Honor.

The Court: Objection sustained.

Mr. Hackley: I will offer the product identified by the witness as the plaintiffs' exhibit next in order for identification, if your Honor please. I believe that is Exhibit 39.

(The core referred to was marked Plaintiff's Exhibit No. 39 for identification.)

Mr. Hackley: Q. How was this core, Exhibit 39 for identifi- [326] cation, baked, if you know?

(Testimony of Otto William Goth.)

A. That was baked after the fire was shut off.

Q. Did you ever make any cores, or observe any cores made with the Ruddle product, where the baking occurred during the time that the oven was on?

A. Yes.

Q. And with a hood over the cores?

A. Yes.

Q. How did those cores come out?

A. They came out all right.

Mr. Hackley: That is all.

Cross Examination

Mr. Aurich: Q. Mr. Goth, I understood you to say you worked approximately eight months with Mr. Ruddle's core oils at Macauley's?

A. Yes, about that time.

Q. Part of that time was with the mineral oil and part of the time was with the asphalt emulsion?

A. Yes.

Q. Can you tell me just generally how much time was with the asphalt emulsion and Mr. Ruddle's so-called solution, and how much time with the mineral oil and the solution?

A. Well, I would say about four months apiece.

Q. About four months in each?

A. Something like that.

Q. And would the number of cores that you made with each be about the same, or did you make more cores with one than with the other?

A. I exactly couldn't say.

Q. You never attempted to use Mr. Ruddle's core

(Testimony of Otto William Goth.)

oil in the regular production operations at the Macauley Foundry?

A. No; that was all just test work.

Mr. Aurich: That is all.

The Court: Q. What kind of work is Macauley doing now?

A. Right now we are supplying V-12 submarine chasers—that is Hall-Scott work; Union Diesel, Commander motors, Offenheimer motors in Los Angeles, there is some Jackson work—of course, that is [327] being done in Los Angeles.

Q. How many core-makers and molders have you?

A. The last report I turned in to the Journey-men's Local at the last meeting was 246.

Q. Molders?

A. No; that is everybody. There is 68 molders—I mean core-makers; and I think there is—there is 96 all told; that is, the snap room.

Q. How many master core-makers now?

A. Sixty-two, I think.

Q. What do they use now in the making of cores?

A. We are using Houghton Oil.

Q. What is Houghton Oil, as best you can describe?

A. Well, it is something like linseed oil. It has some linseed in it.

Q. It is a solution of linseed?

A. I don't know what they have—they have China Oil in it, they have linseed—they have quite a number of things in it; I don't know exactly what

(Testimony of Otto William Goth.)

they are. You see, all the cylinder heads, all the Hall-Scott cylinder blocks, that is all made in dry sand, that is, dried overnight in cores. That is all the work that is done on the floor.

Q. And tell me, of all these cores that you made during the period here in 1937, how many pounds of castings were produced from the cores you made, generally? A. From Mr. Ruddie's?

Q. Yes; just your best estimate.

A. You mean tonnage?

Q. Yes. Was there a ton?

A. Oh, yes, a ton all right; more than that. You see——

Q. What kind of castings were they?

A. Cylinder heads, pumps—you see, if you make like two pumps, you would break one up to see how the sand would work. Olson would say, "That is a dandy," and let it go through, sell them, let it go through with the orders?

Q. Approximately how many?

A. Well, I would say a ton. [328]

Q. A ton? A. Yes.

Q. In that eight months?

A. Yes. See, there was no full time work on it at all. It was just—there wasn't much to do at a time, and Bill let them go through. What the shop was after, they thought they could save an awful lot of money on gas. Now, we have a battery of 19 ovens running in there, and that is an awful gas bill every year.

(Testimony of Otto William Goth.)

Q. Tell me how many electric drying machines have you?

A. We have no electric machines.

Q. In California, anywhere?

A. I don't know.

Q. You do not know of any, do you?

A. No, I don't.

Q. Aside from the furnaces that fire by gas, what other method do they use?

A. If they shut the gas off, no more coke.

Q. I mean foundries generally, if you know, California and the Western States.

A. Fire with coke.

Q. That is all? A. Yes.

Q. The thing hasn't changed very much since I used to make cores.

A. Were you a core-maker?

Q. Yes. A. I never knew that.

Q. Only I was at the work ten years before you got started. A. I got started in 1910.

Q. That is rather interesting, isn't it?

A. Very interesting work.

Q. You go back and tell them over there you met a core-maker today who is sitting on the bench.

A. I will tell them. Do you know Silverfoot?

Q. Yes.

A. The gentleman is pretty near gone. The doctors gave him up last week.

The Court: That is all. Thank you, sir.

Mr. Hackley: May I ask the witness a couple of questions, [329] your Honor, before he leaves?

(Testimony of Otto William Goth.)

The Court: If you gentlemen who are presenting this case would realize I have read the pleadings over carefully, what we have been enacting here for the last four or five days, you would be amazed.

That is all. Step down.

Mr. Hackley: Then I may not ask the question I have?

The Court: You can ask any questions you want.

Mr. Hackley: This man is over from the plant. I would have to call him back.

Mr. Goth, will you take the stand for just a second?

Q. Did you make any comparison of the baking time of Ruddle cores and cores made with Houghton Oil?

A. Well, the only comparison you can take with that, now, that core that was there, with Houghton Oil——

Q. You refer to this core for identification here, Exhibit 39?

A. Yes. With Houghton Oil, under 550 degrees of heat, that would take about 45 minutes to dry thoroughly through.

Q. How long did this core take to bake, if you know?

A. I had to bring the oven down, shut the fires off; 25 minutes with no fire in it.

Q. What was the temperature?

A. 150; maybe less than that—just enough heat in it to dry it, that is all.

Q. Would you be able to use the Ruddle core oil

(Testimony of Otto William Goth.)

which you have testified about here, the asphalt product, in regular production in your plant, in your opinion as a core-maker?

A. Well, you would have to get something about drying that—you would either have to have an electric oven—you couldn't use it with an open flame.

Q. Other than that one thing—— [330]

A. That is the only thing I saw wrong with it.

Q. Could you use your direct fire ovens in any way with that product?

A. Well, they would have to be all rebuilt. Those burners—some burners run the full length, 58, 60 tips. Their ovens are direct-blaze ovens in there. Just how you would do that, I don't know.

Q. You are not an oven mechanic, are you?

A. No.

Mr. Hackley: Thank you.

I have one other witness from the foundry, your Honor, that I would like to put on here.

ANTHONY ANACLERIO,

Called for the Plaintiffs; Sworn.

The Court: Q. You heard the last witness on the stand, did you? A. Yes, I did.

Q. Is there anything other than what he said that you could tell us about?

A. Well, I made some cores myself.

The Court: All right, proceed.

Mr. Hackley: If I asked that question it would be leading.

(Testimony of Anthony Anaclerio.)

The Court: To save time, gentlemen; I think we are wasting a lot of time.

Direct Examination

Mr. Hackley: Q. Mr. Anaclerio, you have listened to the testimony of Mr. Goth a moment ago. You work with him over at the plant?

A. Yes, I do.

Q. The Macauley plant? A. Yes.

Q. What is your job over there?

A. I am a core-maker.

Q. How long have you been working at Macauley's?

A. Well, I have been with the firm about eight years.

Q. Continuously?

A. No; sir years at one time—about seven [331] years at one time, and about a year this time.

Q. When did you leave the plant after the first experience? A. About 1928.

Q. And went to work somewhere else?

A. Yes, I did.

Q. As a core-maker? A. Yes.

Q. Where?

A. Best Foundry, San Leandro.

Q. That is the Best tractor people?

A. Yes.

Q. And you worked at that time until you went back to Macauley?

A. I went back to work—it was the same company; they had two foundries—the Atlas Diesel Engine Company.

(Testimony of Anthony Anaclerio.)

Q. And then about a year ago you went back to work at Macauley's? A. Macauley's.

Q. About how long have you been making cores?

A. About 15 years.

Q. Is that a family tradition with your family?

A. Yes. May I say, my father worked with the judge here 35 years ago.

The Court: I knew I would be discovered before I got through.

Mr. Hackley: I did not know that was going to be the answer.

Q. Your father worked as a core-maker before you?

The Court: He worked with me 35 years ago, his father.

Mr. Hackley: Q. What was your father's name, by the way? A. Frank; Frank Anaclerio.

Q. Is he still living?

A. Still living and still molding.

Q. Where is he working, by the way?

A. The Atlas Diesel Engine Company; 72 years old.

Q. Are you acquainted with Mr. Ruddle, one of the parties in this case?

A. Well, not very long, but I have met the man.

Q. When did you first meet him?

A. About 10 days ago.

Q. Under what circumstances?

A. Well, he came there with some stuff to make cores, and he mixed it up, and I made the cores for him. [332]

(Testimony of Anthony Anaclerio.)

Q. Who instructed you to make the cores for Mr. Ruddle? A. Mr. Goth.

Q. Did Mr. Silverfoot authorize it, do you know?

A. Did he what?

Q. Did Mr. Silverfoot authorize it? You work under him, don't you?

A. Yes. Yes, he did.

Q. You said Mr. Ruddle brought you some stuff. Did you bring to court this morning a sample of some of that material? A. Yes, I did.

Q. Are these the samples I have in my hand?

A. Yes, they are.

Q. What is this I have in a bottle here? Is that one of the products he brought to you?

A. Yes.

Q. Do you know what it is made up of?

A. No, I do not.

Q. All you know is what you see in the bottle?

A. What I see in the bottle.

Q. You brought this over with you this morning?

A. Yes.

Q. And this is the product you used, yourself, to make cores? A. Yes.

Mr. Hackley: I offer for identification as Plaintiffs' Exhibit 40 the sample of the liquid which the witness has identified as having been used in making certain cores. For the record, I might tell you this is what is known as the Ruddle Solution. You are welcome to have any sample that you wish.

Mr. Aurich: If you can tell me what the formula

(Testimony of Anthony Anaclerio.)

of Ruddle Solution is, I would rather have that than the sample.

Mr. Hackley: Mr. Ruddle told you in the testimony yesterday, told you exactly how it was made.

(The bottle of solution referred to was marked Plaintiffs' Exhibit No. 40 for identification.)

Mr. Hackley: Q. What is this other container we have here? [333]

A. I don't know what it is. I call it tar. It is an emulsion of some kind.

Q. Some kind of petroleum product?

A. Yes.

Q. And this is another product you used in making the cores, is it? A. Is it another?

Q. Is it another one of the products you used to make the Ruddles cores? A. Yes.

Q. You brought that with you this morning?

A. Yes.

The Court: Q. How did you use that in making cores? You tell me that yourself. How did you use this product?

A. Well, when Mr. Ruddle first came there, he mixed it up himself out of both of those there.

Q. You know nothing about it, only he mixed something?

A. Yes; I don't know nothing about it.

Q. Don't know now?

A. What do you mean?

Q. About what the contents of these things are?

(Testimony of Anthony Anaclerio.)

A. I don't know what it is, what is mixed in it.

Mr. Hackley: Q. Did you make any core sand out of it yourself?

A. Yes; last night around four o'clock I made a guess at it, mixed it up, and made some cores myself out of it. And I will say they came out very nice.

The Court: After you fellows get all through guessing, then you expect me to guess.

The Witness: I mean by that I wanted to make some cores, because we had nothing to do, so I just remembered—watched him, how he mixed it—and I thought I put the same amount in, and I made some cores, and, I take it, they are in the box.

Mr. Hackley: I offer the bucket of asphalt the witness has identified as Plaintiffs' Exhibit 41 for identification.

(The bucket of asphalt referred to was marked Plaintiffs' [334] Exhibit No. 41 for identification.)

Mr. Hackley: Q. You testified that you made some cores last night? A. Yes.

Q. Yourself? A. I did.

Q. Approximately what proportions——

The Court: He guessed on everything he did last night. We are not interested in what he did last night. I am sure that I am not. So don't waste any time.

Mr. Hackley: If your Honor please, the witness testified here——

The Court: The Court has ruled. I don't want to hear anything further under the circumstances.

(Testimony of Anthony Anaclerio.)

Mr. Hackley: May I make an offer of proof, your Honor?

The Court: Proceed.

Mr. Hackley: I propose to prove by this witness——

The Court: Not what you propose to do. Proceed. I will sustain the objection to that line of testimony. Now, proceed.

Mr. Hackley: Do I understand, then, I am prevented from presenting evidence of these cores that the witness made last night?

The Court: I am not indicating anything. You proceed.

Mr. Hackley: Q. What do you mean when you say you used these proportions?

A. I didn't know the right amount that he put in there, you see, because——

Q. But you had observed him making cores before. A. Oh, yes, I watched him, yes.

Q. Did you try to use the same proportions?

A. I did. I came very close.

Q. You think you came very close?

A. To the best of my knowledge I did, yes. [335]

Q. What proportion of sand to this liquid did you use? A. About twenty to one.

Mr. Aurich: I object to this entire line of interrogation, your Honor. It is quite evident it is going to the point where this witness has made some cores and they are going to introduce the cores; and I make the same objection I made to the testimony of Mr. Goth when the other cores were introduced.

(Testimony of Anthony Anaclerio.)

The Court: The objection will be sustained.

Mr. Hackley: Simply to complete the record, your Honor, I would like to ask the witness if he can identify the core that he made. I think I have it here.

Q. You stated you tried to follow the proportions you observed Mr. Ruddle use? A. Yes.

Q. And if I understand you, you believe you did follow those proportions? A. Yes.

Q. If not exactly, very closely, is that correct?

A. Very close, sure.

Q. Is this core which I show to you the core that you referred to as having made last night?

A. Yes, it is.

Q. Where was that made?

A. Macauley Foundry.

Q. By you, yourself? A. By myself.

Q. You mixed all the ingredients to make the sand? A. Yes, I did.

Q. Who baked the core? A. I did, myself.

Q. How long did you bake it to get it in this condition?

A. That core there was in the oven 11 minutes when I took it out.

Q. Is that a completely baked core?

A. Yes, it is.

Q. Is that core now ready for casting?

A. Yes, it is. If it wasn't completely baked, you couldn't hold it that way; it would break in your hands. [336]

Q. You brought this over yourself this morning?

(Testimony of Anthony Anaclerio.)

A. I did, yes.

Mr. Hackley: I offer as Plaintiffs' Exhibit 42 the core identified by the witness. I am making that as an offer in evidence, not because I am unconscious of the Court's ruling, but because I want my record.

The Court: You can see this record discloses you are not entitled to produce this evidence, because the parties were not present and do not know anything about it.

Mr. Hackley: This is merely to illustrate the testimony. I am prepared to introduce authorities to show there is a distinct difference between what Mr. Aurich talks about, ex parte tests, and operations carried on by the witness himself, and the evidence of that operation produced to illustrate his testimony. I am not attempting to bind them by this.

The Court: The objection will be sustained.

Mr. Hackley: Therefore I will, in the light of the Court's ruling, offer for identification as Plaintiff's Exhibit 42, the core identified by the witness.

The Court: It may be marked.

(The core referred to was marked Plaintiffs' Exhibit No. 42 for identification.)

Mr. Hackley: Q. In this box you brought in this morning I see you have another core, or what at least appears to be a core, Mr. Anaclerio. Will you tell me what that is, what its history is, and all about it?

Q. Is that ore now ready for casting?

Mr. Aurich: Same objection, your Honor.

A. This core was made from the sand that Mr. Reynolds mixed.

(Testimony of Anthony Anaclerio.)

Mr. Hackley: Q. Mr. Ruddie mixed?

A. Yes; he mixed that sand himself and I made the core.

Q. Did you make the core?

A. Yes, I did. [337]

The Court: Q. When?

A. Well, the early part of this week. I would say about Monday or Tuesday.

The Court: Same ruling as to that. Mark it for identification.

Mr. Hackley: I will ask that the core be marked for identification as Plaintiffs' Exhibit 43.

(The core referred to was marked Plaintiffs' Exhibit No. 43 for identification.)

Mr. Hackley: I would like to complete identification of it before I depart from it.

Q. This core was baked by yourself, was it?

A. Yes, it was.

Q. Under what circumstances?

A. What do you mean, under what circumstances?

Q. What was the condition of the oven? Was the fire on, off, or what?

A. No; I put a hood over it and put sand around the bottom to make it air-tight; and put holes around the top so the gas would not get in it.

Q. How long did this core take to bake?

A. Ten minutes.

Q. Do you make similar or identical cores with that Houghton Oil? A. Yes, we do.

(Testimony of Anthony Anaclerio.)

Q. How long do those cores take to bake?

A. Well, if the oven is 500 degrees it will take an hour and 45 minutes to an hour and a half to dry a core like this.

Q. Is this a completely dried core, this Exhibit 43 for identification? A. Yes, it is.

Q. Is this core ready, now, to be used to make a casting? A. Yes.

Q. How does this core, Exhibit 43 for identification, and how did the core, Exhibit 42 for identification, compare with cores made with Houghton Oil?

A. Well, how do you mean, "compare"? [338]

Q. Well, as to usefulness for casting purposes.

A. Well, personally, for drying the boxes off, I think it is much easier.

Q. How about casting?

A. It makes a nice little casting.

Q. Have you any casting that was made on any of these cores?

A. Yes, I had one made, which is down there (indicating).

Q. You have the casting here? A. Yes.

Q. Did you make the core from which the casting was made? A. Yes, I did.

Q. Was the casting like either of these two cores?

A. Yes.

Mr. Aurich: I object to the leading interrogation of this witness. I understand the witness was to be asked to identify that, but we have departed from that long since.

(Testimony of Anthony Anaclerio.)

Mr. Hackley: This entire interrogation is for the identification of these items here, and your Honor has indicated he does not want to hear this testimony anyhow, and I am just trying to make a record and stop there.

Q. Mr. Anaclerio, was the casting that you have made from a core of the character of Exhibit 42?

A. That is the same core used for that casting.

Q. That is the type of core, is that correct?

A. Yes.

Q. You have brought with you a casting, have you?

A. Yes, I have.

Q. Is this the casting?

A. Yes, that is it.

Q. That was made from a core made by you, you said?

A. Yes.

Q. What kind of a core, like Exhibit 42?

A. The same thing there. That is the core there.

Q. That same type?

A. Yes.

Q. Made with the Ruddle product?

A. Yes.

Q. Are all these cores that you have produced, and the core from which this casting was made, made with that Ruddle product as you [339] have described?

A. Yes.

Q. Was the core from which this casting was made formed by you, yourself—that is, the core itself?

A. Yes.

Q. How about the core sand; is that made up by Mr. Ruddle or by you?

A. Mr. *Reynolds* made up the sand.

(Testimony of Anthony Anaclerio.)

Q. That was last week sometime, you testified?

A. About Tuesday; Monday or Tuesday.

Q. Did you see this casting after it was completed?

A. Yes, I did.

Q. Tell us about that.

The Court: Tell us what about it?

Mr. Hackley: Well, he observed the casting. I do not want to lead the witness, your Honor. I will put it this way:

Q. Did you see the casting after it was poured and when the core was about to be taken out?

A. Well, the sand just ran right out of it.

Q. Did you see that done?

A. It wasn't taken out; it ran right out.

Q. Is that the way a good core should act?

A. Sure. Get a bum core and it will stick all over, and it will be rough inside.

Q. Do you know whether or not this is a good casting?

A. It is a perfect casting. Uncle Sam uses them, so I think they are all right.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 44 the casting identified by the witness.

Mr. Aurich: Same objection.

The Court: Same ruling.

Mr. Hackley: Now I will offer it for identification as Plaintiffs' Exhibit 44.

(The casting referred to was marked Plaintiffs' Exhibit No. [340] 44 for identification.)

Mr. Hackley: I believe I have only offered Exhibit 42 for identification, and now being identified,

(Testimony of Anthony Anaclerio.)

I offer Exhibit 42 for identification in evidence.

Mr. Aurich: Same objection. I think that has already been offered and ruled on.

The Court: Objection sustained.

Mr. Hackley: I just wanted to be sure of my record, Mr. Aurich. Then I will repeat my offer of Exhibit 42 for identification.

The Clerk: It is already marked.

Mr. Hackley: Have I, Mr. Clerk, offered Exhibit 43 for both identification and in evidence? Is that correct?

The Clerk: As far as I know.

Mr. Hackley: I don't want to take any chance on that. I will offer Exhibit 43 in evidence, having been identified by the witness.

Mr. Aurich: Same objection.

The Court: Same ruling.

Mr. Hackley: And then I will repeat the offer for identification.

Q. Now, I will show you one more core, which is the core I was showing Mr. Goth earlier in the testimony, and ask you if you can identify that core, which is marked Exhibit 39 for identification?

Mr. Aurich: I understand this testimony is all being offered subject to my objection?

Mr. Hackley: Yes; I understand the Court has sustained the objection.

The Witness: How do you want me to identify that?

Mr. Hackley: Q. Did you make it? [341]

A. Yes; sure.

(Testimony of Anthony Anaclerio.)

Q. How can you tell?

A. I put marks on it (indicating).

Q. Indicating two marks, one the letter X, and another a part of the letter A?

A. It wasn't intended for anything; I just whacked it in there.

Q. You can identify these as made by yourself?

A. Yes; I put that in there myself.

Q. When did you make this core, Exhibit 39?

A. The early part of this week.

Q. Who mixed the sand?

A. Mr. *Reynolds* mixed it himself.

Q. By Mr. Reynolds you mean this man sitting over here? A. Yes.

Q. The name is Ruddle, R-u-d-d-l-e.

A. That man there.

Q. You just met him in recent days?

A. Yes.

Q. Did you bake this core, Exhibit 39?

A. Yes.

Q. How long did it take to bake this core?

A. About 10 minutes.

Q. And this is the core that would take an hour and 45 minutes or so to bake? A. Yes.

Q. Did you ever work with linseed oil in making cores? A. Yes.

Q. Do you know how long it would take to bake Exhibit No. 39 with linseed oil?

A. I would say an hour and a half, an hour and twenty minutes.

Q. Does linseed oil and Houghton Oil act about

(Testimony of Anthony Anaclerio.)

the same as far as baking time is concerned?

A. About the same, yes.

Mr. Hackley: I offer as Plaintiffs' Exhibit 39 the core last identified by the witness.

Mr. Aurich: Same objection.

The Court: All going in subject to a motion to strike.

Is that all from this witness?

Mr. Hackley: Q. Did you work with this Ruddle sand on the [342] bench yourself? A. Yes.

Q. How did it act on the bench?

A. In what way do you mean, how did it act?

Q. Well, with reference to its length of life that you can work with it before it hardened.

A. We had a good shovelful on the bench about three days, with a damp sack over it, and it wasn't any different then than it was when it was first mixed.

Q. Was it still useful to make cores?

A. Oh, yes; I made cores.

Mr. Aurich: If this is going in subject to a motion to strike, I must insist on the leading character of the interrogation.

The Court: We are wasting a lot of time, gentlemen. Let us get through with the witness.

Mr. Hackley: You have heard the testimony of Mr. Goth about the way this Ruddle core works?

A. Yes.

Q. You were here in court, were you?

A. Yes.

(Testimony of Anthony Anaclerio.)

Q. Do you agree, or disagree, with Mr. Goth's statement? A. I agree with him.

Q. As to the action of the Ruddle product, is that correct? A. Yes.

Mr. Hackley: That is all.

Mr. Aurich: No questions.

The Court: Q. Tell me, are you married?

A. Yes.

Q. Where is your father living, in relationship to you?

A. Well, I live in Albany, right on the Berkeley line—just off the Berkeley line.

Q. Where does your father live?

A. On Fifth Street, the same place.

Q. Did you have your Thanksgiving turkey together? [343]

A. Yes, we did.

(Discussion between the Court and the witness.)

The Court: Call your next witness.

Mr. Hackley: If your Honor please, I want to recall Mr. Ruddle for a moment to identify the solution in this bottle here, if he can.

Mr. Ruddle.

ALLAN B. RUDDLE,

recalled for the Plaintiffs; previously sworn.

Direct Examination

Mr. Hackley: Q. Mr. Ruddle, can you identify

(Testimony of Allan B. Ruddie.)

the bottle and its contents, Exhibit 40 for identification?

A. Yes; I made this solution about ten days ago.

Q. Put it in a bottle?

A. I put it in that bottle, yes, sir.

Q. What is the solution that you made?

A. Sodium silicate, which I got from Philadelphia Quartz, the aluminum sulphate, sodium fluosilicate I got from Braun-Knecht-Heimann. I took one gallon of water, and in it I put one ounce of aluminum sulphate, one ounce of sodium fluosilicate, and two gallons of sodium silicate, and made that solution.

Q. Did you stir it up?

A. Yes; I made it as I described. I stirred them all thoroughly as I put them in.

Q. And then put a sample of that in this bottle? [344]

A. That is right.

Q. What did you do with the bottle after you put the sample in it, this bottle here?

A. I took it to the Macauley Foundry.

Q. Who did you give it to?

A. Well, I mixed the sand and the asphalt emulsion. I got the asphalt emulsion from the American Bitumuls Company.

Q. You are referring to Plaintiffs' Exhibit 41, by any chance?

A. That is right.

Q. Exhibit 41 for identification?

A. That is right. I got it from Mr. Buckley at the American Bitumuls Company.

(Testimony of Allan B. Ruddie.)

Q. And you took the two of these to the Macauley?

A. Macauley Foundry, and there I mixed up——

Q. When?

A. I think it was last Tuesday, I think—a week ago last Tuesday.

Q. Did you use these products in any way after you took them to the Macauley Foundry?

A. No, that is all—did you mean did I make up the solution?

Q. Did you use it in any way out there?

A. Yes; I made up—they call it a batch of sand, and this solution, together, to make some cores.

Q. Who did you work with there at the foundry?

A. Otto Goth is the one I took it to, and he called in this boy who was here this morning, Tony Anaclerio.

Q. Tony Anaclerio? A. Yes.

Q. You refer to Otto Goth, who was on the witness stand, Tony Anaclerio, and yourself?

A. That is right. They worked on adjoining benches together, and he asked Tony to make these cores.

Q. You made the core sand yourself?

A. Yes, I mixed the core sand myself. [345]

Q. Tell me the formula you used to make the core sand.

A. I took 1750 cc's of sand and 80 cc's of this solution and 50 cc's of asphalt emulsion.

Q. Is that what you call a batch?

(Testimony of Allan B. Ruddie.)

A. That is what he called a batch, yes.

Q. What did you do then? How did you mix those up?

A. Mixed them by hand, ran them through a riddle three times.

Q. In what way did you mix them up? Give us the steps of that.

A. I put the sand on the bench, poured the solution in a hole through it, rubbed it in my hands, and then I put the asphalt emulsion in, rubbed it through my hands, and then put it through a riddle three times.

Q. The result was a core sand?

A. Yes, that is right.

Q. What did you do with that?

A. I turned it over to Otto Goth, and he in turn asked this boy, Tony, to make up some cores.

Q. Were any cores made up while you were there? A. Yes, they were.

Q. Are any of those cores the cores which are here today?

A. Yes, they are. I saw him put a mark on the one he made.

Q. Do you by any chance refer to the core Exhibit 39 for identification?

A. Yes, that is the one that has the mark on it.

Q. What mark do you observe on there that you recognize?

A. This "X", and then he put a little mark up here; I observed him mark it.

(Testimony of Allan B. Ruddle.)

Q. It looked like an inverted "V" or something of that kind? A. That is right.

Mr. Hackley: I offer in evidence as Plaintiffs' Exhibit 40 the solution identified by the witness.

Q. By the way, Mr. Ruddle, were you with Mr. Anaclerio this morning when he picked this solution, Exhibit No. 40, up and [346] brought it over here? A. Yes, I was.

Mr. Hackley: That is Plaintiffs' Exhibit 40, and the asphalt emulsion identified by the witness as Plaintiffs' Exhibit 41.

Mr. Aurich: I make the same objection, your Honor, and I assume they may be received subject to the same ruling of the Court and subject to a motion to strike.

The Court: Same ruling.

(The solution and asphalt heretofore marked Plaintiffs' Exhibits 40 and 41 for identification were received in evidence.)

The Court: Is that all from this witness?

Mr. Hackley: That is all from this witness.

The Court: Step down.

Mr. Hackley: Mr. Waller, please.

Mr. Aurich: This witness, as I started to tell your Honor, is extremely hard of hearing. He has an instrument which is pitched to a certain tone. Will you speak loud to him, Mr. Clerk.

ARTHUR C. WALLER,

called for the Plaintiffs; sworn.

The Clerk: Please state your full name to the Court. A. Arthur C. Waller.

Direct Examination

Mr. Hackley: Q. Where do you reside, Mr. Waller? A. Seattle.

Q. What is your home address?

A. 8258-15th Avenue, Northeast, Seattle, Washington. [347]

Q. How long have you lived there?

A. Since the end of October 1938.

Q. Continuously? A. I travel.

Q. Your residence——

A. But my home has always been there since that time.

Q. What area do you travel through primarily?

A. The State of Washington, Oregon, Panhandle, Wyoming, and British Columbia.

Q. What is your occupation?

A. I am a civil engineer with the asphalt department.

Q. What company?

A. Shell Oil Company.

Q. You work out of the Seattle office?

A. Yes, I do.

Q. That is your regular headquarters, is it?

A. Would you mind repeating?

Q. I say, is that your regular headquarters?

A. That is my regular headquarters.

Mr. Hackley: Your Honor, I have here a com-

(Testimony of Arthur C. Waller.)

plete deposition of this witness' testimony which was taken last week. The opportunity for cross examination was presented to counsel and was not taken advantage of. I have produced everything I want of this witness, which comprises 106 pages of testimony, in this form. The witness is a resident of Seattle. His office is in Seattle. He works out of the Seattle office of the company. For some reason not clear to me, the Shell Oil Company has seen fit to bring him into this jurisdiction without any notice or warning to me at all, after I have gone to the expense of this testimony, reducing it to writing, and now I assume, under your Honor's ruling yesterday, I would be compelled to go through the whole testimony all over again. I think it is an imposition on the Court. I think it is an imposition on the plaintiffs to proceed that way. I have examined [348] the rule, and I have attempted overnight to find any authorities as to whether or not Rule 26, subdivision (3) of section (d) is directed to the residence of the witness, normal residence of the witness, or the apparent chance whereabouts of the witness at the time of trial, and every reasonable interpretation appears that the rule is intended to apply to a witness normally residing away from and/or more than one hundred miles out of the jurisdiction of the court.

Therefore, in the interest of time and in every way, and to the convenience of this record, in settling this record completely, I would like to offer again the deposition of the witness on the stand,

(Testimony of Arthur C. Waller.)

Mr. Arthur C. Waller, and ask that it be received, and it will be read into the record. Then I have no objection if he does want to recall Mr. Waller during their case or examine him during our case, cross examine him during our case, to that being done. I submit in fairness, equity and the meaning of the rule we should be able to present this deposition in this manner.

Mr. Aurich: I make the same objection, of course, under the rule, that I made before. I do not desire to enter into any extended argument about the equities or the good faith of the parties here unless your Honor wishes to hear from me on that matter.

The Court: Is there any objection to this going in?

Mr. Aurich: Yes, your Honor.

The Court: What is it?

Mr. Aurich: The objection is that it is full of irrelevant matters and hearsay. Counsel and the witness indulged in argument such as, What would happen if you dropped an egg on Market Street; could you pick it up?—matters that would never be [349] received by the Court.

The Court: Subject to your legal objections with relation to the hearsay testimony?

Mr. Aurich: Yes, your Honor. I think it has other objections. I had intended to call this witness as my own witness. I intended to examine him according to the story that I understand he

(Testimony of Arthur C. Waller.)

can tell. That will be merely a duplication of what he will say here in substance. But I certainly am entitled, I believe, to present my evidence in my own way, and I can't be prevented in that by any action of these plaintiffs.

Mr. Hackley: I do not intend to do that.

Mr. Aurich: I did not interrupt you, Mr. Hackley.

Mr. Hackley: I said I do not propose to prevent you, Mr. Aurich.

Mr. Aurich: What happened in this case was simply this, your Honor: The plaintiffs took numerous depositions of practically every witness I intended to call, and Mr. Hackley knew at the time he took those depositions that they were not admissible in evidence. As far as Mr. Waller was concerned, he knew when that deposition was concluded it was not going in evidence, because I made no attempt to cross examine the witness; I made no attempt to object to the questions, as to the form, or anything of that sort. For example, I mention the long argument that they indulged in. It goes into pages. Now, under the rule, if that deposition is offered in evidence, I am precluded from asserting those objections.

The Court: Suppose it goes in subject to all the legal objections you wish to make?

Mr. Aurich: Pardon me?

The Court: Suppose you allow it to go in the interest of [350] time subject to your legal objections that you have indicated.

(Testimony of Arthur C. Waller.)

Mr. Aurich: Objection as to form as well as to substance?

The Court: Yes.

Mr. Aurich: I will have no objection, provided I am not precluded from calling Mr. Waller as my own witness. I have no objection to that.

The Court: Under those circumstances, it may go in.

Mr. Hackley: Did you wish to examine the witness now for any reason on the deposition? I do not presume so, but I do not want to deny you that opportunity.

Mr. Aurich: I do not know what the status is.

Mr. Hackley: Mr. Aurich is correct. He is entitled to have any objections to this testimony heard.

The Court: Let it go in subject to your motion to strike and over the objection of counsel.

Mr. Hackley: I propose to read the deposition into evidence, and you can advance your objections as it is read.

The Court: I think we can save a lot of time if we allow it to go in subject to all legal objections.

Mr. Aurich: Your Honor, I desire to offer Mr. Waller's deposition that way, but I certainly have no desire to sit here and have your Honor listen to the reading of this testimony.

Mr. Hackley: That is perfectly satisfactory to me, your Honor. What was the exhibit number?

The Clerk: Plaintiffs' Exhibit 37 for identification.

(Testimony of Arthur C. Waller.)

Mr. Hackley: I will offer the deposition of the witness Waller as Plaintiffs' Exhibit 37.

The Court: It may go in subject to the legal objections advanced by counsel, and over his objections. It is going in subject to a motion to strike. [351]

(The deposition heretofore marked Plaintiffs' Exhibit No. 37 for identification was received in evidence.)

(Plaintiffs' Exhibit No. 37, the Deposition of Arthur C. Waller, is set out at page 913 of this printed record.)

Mr. Hackley: And I will offer the exhibits annexed to the deposition in sequence; I will offer them separately so you may be heard, Mr. Aurich.

Mr. Aurich: I do want to be heard on these, your Honor.

Mr. Hackley: The first of these exhibits is Waller Exhibit No. 1 to the deposition, comprising a set of longhand notes identified by the witness. I wanted to know if any objection was made at the time of the offer.

Mr. Aurich: I understand these are all subject to whatever objection I may have, Mr. Hackley, either then or now.

Mr. Hackley: Yes.

Mr. Aurich: I have no objection to that exhibit, the next one in order.

Mr. Hackley: Then I will offer as Plaintiffs'

(Testimony of Arthur C. Waller.)

Exhibit 45 the notes of the witness Waller appearing as Exhibit 1 to the deposition of the witness.

(The notes referred to were marked Plaintiffs' Exhibit No. 45 in evidence.)

Mr. Hackley: I understand you have no objection to Waller Exhibit 2, Mr. Aurich?

Mr. Aurich: That is correct.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 46 the notes of the witness Waller identified by him during the taking of his deposition as Exhibit 2 to that deposition.

(The notes referred to were marked Plaintiffs' Exhibit No. 46 in evidence.)

Mr. Hackley: Mr. Aurich, during the taking of Mr. Waller's deposition there was a demand made upon you for some documents [352] in a file which Mr. Waller left in Washington, at Seattle, and you stated at the time of the deposition that you would produce those documents—at least would locate them, examine them, and let me examine them if you felt they were proper, or something of that sort. I can read the record on it.

Mr. Aurich: We are wasting a terrific lot of time over nothing. You asked me to produce Mr. Waller's file. I told you I would. I produced it a week ago today and your office was advised that the file was in my office here in San Francisco for your inspection at any time you want, and it is there right now.

Mr. Hackley: I have no information on that

(Testimony of Arthur C. Waller.)

fact at all, although I have no doubt you may have notified my office. If you say you did, you did.

Then I offer for identification as Plaintiffs' Exhibits 47, 47-A, 47-B and 47-C respectively the memoranda which are annexed to the Waller deposition as Exhibits 4, 4-A, 4-B and 4-C.

Mr. Aurich: I understand that is only for the purpose of identification?

Mr. Hackley: For identification.

(The memoranda referred to were marked Plaintiffs' Exhibits 47, 47-A, 47-B and 47-C for identification.)

Mr. Hackley: Mr. Spotswood, please.

EARL HENRY SPOTSWOOD,

called for the Plaintiffs; sworn.

The Clerk: Please state your full name to the Court. A. Earl Henry Spotswood.

Mr. Aurich: I might say to the Court, this is another witness I propose to call on behalf of the defendants. [353]

Direct Examination

Mr. Hackley: Q. State your full name, age and residence address, please.

A. Earl Henry Spotswood, twenty-nine, 311 Ramona Avenue, El Cerrito, California.

Q. By whom are you employed?

A. Shell Oil Company.

(Testimony of Earl Henry Spotswood.)

Q. How long have you worked for Shell Oil Company?

A. Approximately five years.

Q. When did you go to work for them, do you remember? A. September 1936.

Q. What was your occupation, or how were you engaged before that?

A. Before that I was employed by a private individual as an inspector at a paving plant.

Q. For how long?

A. For approximately six months.

Q. And before that where were you?

A. I attended college.

Q. What school?

A. University of California.

Q. Did you graduate there? A. Yes.

Q. What degrees? A. B. S.

Q. What were the particular majors that you had at California?

A. Mechanical engineering.

Q. What plant of Shell Oil Company are you located at? In Martinez?

A. I am sorry; I didn't catch that question.

Q. I say, are you located at the Martinez plant of Shell? A. Yes.

Q. Are you acquainted with Allan B. Ruddle, one of the plaintiffs in this action?

A. I am.

Q. How long have you known Mr. Ruddle?

A. Oh, for about four years.

(Testimony of Earl Henry Spotswood.)

Q. What was the occasion on which you first met Mr. Ruddle, do you remember?

A. Yes, I recall meeting Mr. Ruddle at the Martinez refinery. [354]

Q. The Shell plant at Martinez?

A. That is right.

Q. Did you ever meet him before that?

A. I don't recall meeting him before that.

Q. What was the occasion of your meeting Mr. Ruddle, do you recall?

A. In connection with this core oil product.

Q. Was he just sent up to you at Martinez by somebody else in the company, or what were the circumstances?

A. I don't recall exactly. I believe he came up with some other representatives of the company and visited me at the laboratory.

Q. Do you remember who the other men of the company were? A. No, I don't.

Q. Would it have been Mr. McSwain, do you remember?

A. I don't recall whether it was Mr. McSwain or not.

Q. When you first went to work for Shell Company in what division were you working?

A. I was employed in a motor laboratory.

Q. For how long?

A. Oh, about four months.

Q. Doing what?

A. Testing lubricants and greases and so forth.

Q. This was up at Martinez too? A. Yes.

(Testimony of Earl Henry Spotswood.)

Q. Then where did you go, or what did you do?

A. Then I was transferred to asphalt research, at the same plant.

Q. About what date would you fix as the time when you went to the asphalt research division of Shell?

A. Roughly it was around the first of the year 1937.

Q. Now, what would you fix as the approximate date when you first met Mr. Ruddle?

A. To the best of my recollection it was in the first part of the year 1938.

Q. Were you still in the asphalt research division at that time? [355]

A. I was.

Q. Who were your immediate superiors in that department?

A. You mean at that time?

Q. Yes.

A. Mr. L. J. Schneider was my superior at that time.

Q. Did you have anyone else working in the department with you, or was it just yourself and Mr. Schneider?

A. No, there were other people in the department.

Q. When you met Mr. Ruddle were you given any instructions by anyone in the company as to what to do in connection with Mr. Ruddle, to work with him or anything of that sort?

A. I don't recall any specific instructions.

Q. Did you get any written instructions from anyone in the company?

(Testimony of Earl Henry Spotswood.)

A. I don't recall any.

Q. What did you do then with Mr. Ruddle, can you recall, in connection with this core oil work that you speak of?

A. You mean at this first meeting?

Q. Yes.

A. Mr. Ruddle discussed the subject of core oils with me, and during the conversation he pointed out that he had a material, a so-called special solution, which when mixed with asphalt emulsion and mixed with sand would make a satisfactory core-binding material. He stated at that time that this material was satisfactory in all respects except that occasionally on baking the cores, they had a tendency to show soft spots, uneven soft [356] spots which made them unsatisfactory for use.

Q. This was at the first meeting you had?

A. That is right.

Q. What did you mean when you said "so-called special solution"?

A. Mr. Ruddle intimated to us that he had this special solution which he had either invented or ran across, and this material, when mixed with asphalt emulsion, would work as a core binder.

Mr. Hackley: I move to strike that part of the witness' testimony where he said "intimated," your Honor, and ask the witness to refer only to what either Mr. Ruddle said to him or he said to Mr. Ruddle.

The Court: The question and answer will stand. Proceed.

(Testimony of Earl Henry Spotswood.)

Mr. Hackley: Q. What did Mr. Ruddle say to you about his core oil? Did he tell you anything about it at that time?

A. Only what I have already testified to.

Q. Did he tell you anything about how to make it, the core oil?

A. I don't recall whether he told me how to use it at that time or not.

Q. What else took place at this first meeting with Mr. Ruddle?

A. That is all I recall at that meeting.

Q. Now, you said "he intimated to us." Whom do you mean by "us"?

A. Myself.

Q. Anyone else?

A. I don't know whether there were any other persons there or not.

Q. Do you use the word "us," then, in the editorial sense, as meaning yourself?

A. Meaning myself.

Q. Or you and the company, perhaps?

A. Possibly.

The Court: Or maybe also Mr. Ruddle.

Mr. Hackley: Mr. Ruddle could hardly intimate something to himself.

The Court: Two were present. [357]

Mr. Hackley: Yes, but he is referring to what "Mr. Ruddle intimated"—were his words—"to us," and I am trying to find out who "us" was.

The Court: Proceed.

Mr. Hackley: Q. Mr. Spotswood, did you do

(Testimony of Earl Henry Spotswood.)

anything after Mr. Ruddle left, or while he was there, relating to this core oil of Mr. Ruddle's, make any tests, make any investigations, do anything at all?

A. I don't recall doing any work during the first meeting.

Q. Did you get any instructions from any of your superiors as to how to work with Mr. Ruddle or what to do?

A. No, I don't recall any instructions.

Q. What did you do?

A. We just talked and that was all.

Q. And Mr. Ruddle left and you didn't know whether you would ever see him again, is that it?

A. That is right.

Q. Did you ever see him again?

A. Yes, I saw him again.

Q. How long after the first meeting?

A. I don't recall—yes, I do; I do recall meeting Ruddle again at a later date. I believe it was the following month, February.

Q. About how long elapsed between the two meetings?

A. Well, Ruddle visited the refinery sometime in January, and I met him again in February.

Q. Well, was there just a few days between the meetings, or several weeks, or what?

A. I don't recall whether there was several days or several weeks.

Q. And did the subject of this Ruddle core oil

(Testimony of Earl Henry Spotswood.)

come to your attention at any time between Mr. Ruddle's first and second visits to you?

A. I don't understand that question.

Q. Well, I will repeat it this way: If I understand your testimony, you met Mr. Ruddle in January of 1938 and again in [358] February of 1938. You can't fix the time of either one of those meetings, is that correct?

A. Not definitely.

Q. Except to put them in those months?

A. That is right.

Q. You don't know definitely how far apart those two meetings were?

A. No, I can't fix them definitely.

Q. Now, the point I want to find out is: Did you do anything with regard to Ruddle's core oil at all between the time you first met him in January—Mr. Ruddle—and the time you met Mr. Ruddle again in February?

A. I don't know whether I did or not.

Q. Have you any recollection on that at all?

A. Possibly my notebooks might help to fix some of that data.

Q. I would like to get just what your general recollection is, or as much of your recollection as you have, before we refresh it with notes. You have no independent recollection of anything transpiring relating to Ruddle's core oil between those two meetings, is that correct?

A. I do recall having done some work on some

(Testimony of Earl Henry Spotswood.)

sand in February. I don't know whether that was prior to this later meeting with Ruddle or not.

Q. What was this work relating to sand? Was that in any way connected with Ruddle's core oil? A. It had to do with core oil.

Q. What was the nature of that work?

A. I just ran an analysis on a sample of sand.

Q. Under whose direction or whose instruction?

A. I don't recall whose instructions they were.

Q. No recollection at all? A. No.

Q. Where did you get the sand?

A. I don't recall where I got the sand. I believe it was from the Macauley Foundry.

Q. Did you go down there and get it?

A. I don't recall. [359]

Q. Did you go down there and get it?

A. I don't recall whether I personally obtained it or whether it was given to me by other people.

Q. It might have been either?

A. It might have been.

Q. Did you ever go to the Macauley Foundry, do you remember? A. Yes.

Q. After the second occasion of your meeting with Mr. Ruddle? A. I don't recall—

Mr. Aurich: I object to that, if your Honor please. The witness has only named one occasion when he met Mr. Ruddle.

Mr. Hackley: No, he said he met him in January and he met him in February, unless I sorely misunderstood him.

(Testimony of Earl Henry Spotswood.)

Mr. Aurich: It might very well be this meeting at Macauley's is the second occasion he refers to.

The Witness: That is exactly right.

Mr. Hackley: Q. With that statement of counsel you remember your second meeting with Mr. Ruddle was at the Macauley Foundry?

A. I was going to state that that was so prior to the interruption.

Q. Who else was present at this Macauley Foundry?

A. I don't recall who was present, except I remember Mr. Ruddle was there.

Q. You can't remember anyone else?

A. No, I don't.

Q. Did you meet any of the Macauley people there? A. Yes.

Q. Whom did you meet?

A. I met a coremaker.

Q. Do you remember his name?

A. Otto something-or-other.

Q. What did he look like?

A. He was a tall man, heavy-set.

Q. Do you remember his last name?

A. No, I don't.

Q. Would you know it if you heard it, do you think? [360] A. Possibly.

Q. Otto Goth? A. It sounds familiar.

Q. He was a coremaker at Macauley's at the time? A. That is right.

Q. Tell us just what took place at the Ma-

(Testimony of Earl Henry Spotswood.)

cauley Foundry when you visited—This, I understand, was in February 1938?

A. Yes. We went into the foundry, Mr. Ruddle and myself and possibly other people that might have been there that I don't recall, and we went to the back of the foundry, and I recall Mr. Ruddle introduced me to Mr. Goth, and then Mr. Ruddle had Mr. Goth prepare some core sand using the so-called core oil that Mr. Ruddle had and which he gave to Mr. Goth, and a mixture was prepared and cores were molded and baked, and after the cores were baked they were examined and they were found to have soft spots in them. And I recall Mr. Ruddle remarking that that is substantially what he had been telling me that previous time that I had met him.

Q. About soft spots in the cores?

A. That is right.

Q. Do you remember what the condition of the ovens were at the time of the baking of these cores, whether the fires were on or off?

A. They were on.

Q. You don't remember now whether any other representative of your company was there at the time you met at Macauley's?

A. No, I don't.

Q. Did you, at the time you met Mr. Ruddle at Martinez on the first occasion in January, receive any statements or information from him relating to what his core oil was, what was in it?

A. Only so far as stating that he had this secret

(Testimony of Earl Henry Spotswood.)

solution, and when mixed with asphalt emulsion it could be used as a core oil. [361]

Q. Was this secret solution the same as the special solution you talked about a moment ago?

A. Yes.

Q. Did he tell you anything about the formula for the making of a core sand from his core oil at the time of your first meeting?

A. I don't recall whether he did or not at that first meeting.

Q. Did he at the Macauley Foundry on the second meeting?

A. I don't recall whether he did at that time either.

Q. When do you first recall, if at all, receiving any statements or information from Mr. Ruddle about the proportions or formula for making a core sand from his core oil?

A. I do recall that he gave me a formula which he considered to be an optimum formula, but I don't recall when he gave it to me.

Q. Now, you testified, Mr. Spotswood, that you kept notes, do I understand, of your work on Core-Min-Oil?

A. That is correct.

Q. Were those fairly complete notes?

A. Fairly complete, yes.

Q. Are those the notes which you presented in the course of the taking of your deposition earlier in this case, oh, about a year ago or less?

A. That is right. [362]

(Testimony of Earl Henry Spotswood.)

Q. Before I take up the notes themselves, can you remember now what the formula for a riddle core sand was that Mr. Ruddle gave to you? This is during those early stages sometime, I understand.

A. I recall that a formula was given, and there is a formula written in my book, but I wouldn't try to remember what it was without reference to my notes.

Q. About what was the date when Mr. Ruddle first gave you the formula of his core product—or the formula for making a core sand out of his core oil?

A. What was the date?

Q. Yes.

A. I don't know what the date was.

Q. What was it approximately, can you remember?

A. No, I can't remember approximately.

Q. Well, can you remember to a year?

A. It was the year 1938.

Q. Was it in the first part of the year or last part of the year?

A. Probably the first part of the year.

Q. Can you tie it down a little closer? Can you put it in a month, any particular month?

A. No, I can't. My books probably have a date marked next to the formula.

Q. I know, but I am trying to find what your recollection is, if you have any on the subject at all.

A. I don't recall.

Q. You can't fix that date at all?

A. No.

(Testimony of Earl Henry Spotswood.)

Q. I am going to show you a notebook which has been handed to me by your counsel, and ask if this is one of the sets of notes you referred to.

A. Yes, this is one of the books. [363]

Mr. Hackley: Q. Was that kept by you in your own handwriting, that whole notebook, so far as you recall?

A. Yes, it is.

Q. There may be some notes by someone else, but substantially it is your own?

A. Substantially it is mine.

Q. I notice that you have a large number of pages of this notebook sealed up with tape and the like. What is the reason for that?

A. That contains work other than core oil.

Q. Is it your testimony that every page in this notebook marked your notebook No. 1, March 1937, on which any reference to core oil is found is unsealed and open for inspection?

A. Yes, it is.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 48 that part of the notebook No. 1 identified by the witness which is directed to the subject of core oil and which the witness has identified as being those pages which are unsealed; is that correct, Mr. Spotswood?

The Witness: That is right.

Mr. Hackley: For the record, we will note that the offer includes the cover, the two inside cover face sheets of the notebook, on one of which appears: "E. H. Spotswood Research Laboratory Data—Start March 24, 1937," and the following

(Testimony of Earl Henry Spotswood.)

pages of the book itself by their numbers: 94, 95, 121.

(The portions of the notebook referred to were marked [364] Plaintiffs' Exhibit No. 48 in evidence.)

Mr. Aurich: We will be glad to have the seals of the remaining pages removed at any time, if you wish.

Mr. Hackley: I have accepted your word up to now on the fact that everything is revealed, and I am perfectly willing to continue to do so.

For convenience of reference I would like to offer as Exhibit 48-A photostatic copies of the same sheets which comprise the offer Exhibit 48. Since there are only some five sheets out of an entire 120-odd in the notebook, I think it may be more convenient for the Court in later reference to this to have it in this photostatic form.

The Court: They may be admitted.

The Clerk: 48-A.

(The photostats referred to were marked Plaintiffs' Exhibit No. 48-A in evidence.)

Mr. Hackley: Q. I show you another notebook marked "E. H. Spotswood, II." What is this notebook? Another one of yours? A. Yes.

Q. Is this a continuation of the notes started in your first notebook? A. It is.

Q. These notebooks of yours were kept serially; when you finished one you started another, is that correct? A. Yes.

(Testimony of Earl Henry Spotswood.)

Q. Or substantially so?

A. Substantially so.

Q. Could there be some overlapping, perhaps, between the two books?

A. Yes, there is some overlapping.

Q. But it is intended to be a series?

A. It is.

Mr. Hackley: I will offer as Plaintiffs' Exhibit 49 the following parts of the second of the note-books identified by the witness, namely, the cover sheet or cover, marked "E. H. [365] Spotswood, II, April 1938," the inside face covers, directly inside the cover and opposite, and on the top of the latter his notes start with "G. A. Frankel, W. H. Spiri," and so forth, the inside cover of the face sheet and the following pages of the book itself: pages numbered 1 to 80 inclusive, pages 85 to 152 inclusive, and the rear cover face sheet, both sides, as well as the inside of the rear cover.

The Court: Let them go in.

Mr. Hackley: All right.

I offer them as Exhibit 49-A photostatic copies of all of the sheets comprising the offer Exhibit 49.

(The photostats referred to were marked Plaintiffs' Exhibit No. 49 in evidence.)

Mr. Hackley: Mr. Aurich, will you make the same statement with regard to the sealed pages of Exhibit 49 as you made to Exhibit 48? [366]

Mr. Aurich: What is that?

Mr. Hackley: Namely, that they have been

(Testimony of Earl Henry Spotswood.)

sealed because they do not contain this core oil data?

Mr. Aurich: That is true of the three books, Mr. Hackley, and they are ready to be opened for your inspection at any time.

Mr. Hackley: Q. This third book is your third book in order? A. It is.

Q. And your Roman numeral No. III so indicates, on the cover? A. That is right.

Mr. Hackley: I will offer from that notebook all of the pages therein on which any reference to core oil is made, as Exhibit 50, and as Exhibit 50-A I will offer photostatic copies of the sheets in that notebook which are included in the offer Exhibit 50.

(The portions of notebook referred to were marked Plaintiffs' Exhibit No. 50, and the photostatic copies thereof were marked Plaintiffs' Exhibit No. 50-A in evidence.)

Mr. Hackley: Q. Mr. Spotswood, do you prefer to look at your original notes, or do you want to look at these photostats?

A. I prefer the original notes.

Q. All right, I will hand you those original notes. You stated that you had a note of the original formula which was given to you by Mr. Ruddle for the making of core sand. Is that in this first notebook? A. It is.

Q. Will you locate it and read it to the Court, please, giving the date and all the rest, with reference to it.

(Testimony of Earl Henry Spotswood.)

A. There is no date on this particular page, but there is a date on the opposite page of February 8, 1938. There is a notation "Formula used by Mr. Ruddle 1750 cc's of sand, 125 [367] cc's of solution, 40 cc's of Y-104," and in parentheses is "60 cc's of water."

Q. What is Y-104? A. Asphalt emulsion.

Q. What is that solution referred to? Is that the special solution of Mr. Ruddle that you referred to a moment ago? A. That is.

Q. Will you also read the drying temperatures that are noted there?

A. "Drying temperatures: 450 to 600 degrees Fahrenheit."

Q. You will note that the caption of that formula which appears at page 95 of Exhibit 48 is entitled "Formula used by Mr. Ruddle." Where did Mr. Ruddle use that formula?

A. I don't know where he used that formula.

Q. Is that what that word "used" means, that he used it someplace, or is this what he gave to you?

A. It is the formula that he gave to me, and apparently had been used by him.

Q. Did you ever use that formula yourself for making cores? A. I did.

Q. Where?

A. I believe in one of my reports there is the experiment showing this formula having been used.

Q. What do you refer to as your reports?

(Testimony of Earl Henry Spotswood.)

A. A series of reports written by myself on this subject.

Q. Are those the reports that are known as the TAC reports? A. That is right. [368]

Q. Did you do any work at the Vulcan Foundry in Oakland in connection with Core-Min-Oil?

A. I did.

Q. About what was the period of that work?

A. That work began on May 5th.

Q. Of what year? A. 1938.

Q. How do you know that date so definitely?

A. I recall it having been written in my notebook.

Q. You checked your notebook for the date, did you? A. I did.

Q. How long did you continue to work at the Vulcan Foundry on Core-Min-Oil?

A. Until I ceased working on the subject.

Q. Outside of the one visit that you made to the Macauley plant some time in February, 1938, did you make any other foundry visits prior to May 5, 1938? A. No, I don't believe I did.

Q. Did you go out to the Vulcan Foundry at all before that, do you remember?

A. Yes, I do recall one visit to the Vulcan Foundry prior to May 5th.

Q. Do you remember about when that was?

A. It was April 26th.

Q. Whom did you go with?

A. I think I went alone.

Q. What was the purpose?

(Testimony of Earl Henry Spotswood.)

A. I don't recall the purpose of the visit.

Q. Do you remember anything about the visit other than that you did go there?

A. I recall having gone, but I don't recall just what I did at the foundry at that time. [369]

Q. Was the work that you did starting on May 5, 1938, and on through the months following, at the Vulcan Foundry, all set out in one of your notebooks that you have offered here with your testimony? A. Substantially all of it, yes.

Q. What is omitted?

A. From time to time observations were made which were not noted down in the books.

Q. Other than those observations, the notes are complete and would speak for themselves as to what you did? A. Yes, they would.

Q. You identified a formula which was given to you by Mr. Ruddle. I think you fixed the date as being about February 8, 1938, according to your first notebook, Exhibit 48, is that correct?

A. That is right.

Q. Did Mr. Ruddle ever give you any other formulas for Core-Min-Oil other than the one in your notebook, as you recall?

A. I don't recall whether he did or not.

Q. He might have?

A. He might have.

Q. But there was a wide variation in the formula experimented with by yourself, wasn't there?

A. Yes, a wide variation.

(Testimony of Earl Henry Spotswood.)

Q. What was the general nature of those variations? Can you describe them briefly?

A. Yes; I experimented with all ratios of Ruddle Solution—so-called Ruddle Solution—and sand, and asphalt emulsion, in order to determine various properties.

Q. Did you settle on any one of these as a best formula?

A. No, I did not.

Q. Did any one of these formulas appear to you to be better than the others?

A. Yes; some of them appeared to be better than others.

Q. Which ones were those, and refer to any notes that you have, if you like, to give us that information?

A. Throughout my [370] notebooks there is a formula which appears, which consists of 93 per cent sand, $4\frac{1}{2}$ per cent either Ruddle Solution or sodium silicate, and $2\frac{1}{2}$ per cent asphalt emulsion.

Q. 2.5 asphalt emulsion?

A. Yes. And this formula appears in a number of places in my notes, and is one of the ones which gave the best result.

Q. For example, that appears on the 10th page of your second notebook, Exhibit 49, does it not?

A. It does.

Q. Had you ever had any experience in core-making before you did the work in this particular task of Core-Min-Oil?

A. No, I never had.

(Testimony of Earl Henry Spotswood.)

Q. Had you ever been in a foundry?

A. Yes, I was in a foundry once.

Q. Not as a workman, I take it?

A. No; as an observer.

Q. Under what circumstances, and when?

A. I believe it was in connection with my studies.

Q. When you were in college?

A. During school.

Q. Did you learn anything at that time about core-making, other than what you might casually observe?

A. Substantially nothing.

Q. Do you recall the tests which were performed by you when it was determined that the carbon dioxide generated by the flames in a direct fire oven served to soften the surface of cores made with the Ruddle product?

A. I do.

Q. When did you perform those tests? Were those all before the report, Exhibit 3, that is, your TAC Report No. 79? You can refer to your reports. I think you have a set there, haven't you?

A. The work that you have referred to was the basis of the TAC reports.

Q. What is the date of that report?

A. February 24, 1938.

Q. At that date you had made your determination or discovery, [371] whatever it was, that it was the gases of combustion that were doing the damage, is that right?

A. That is correct.

Q. And so reported to your superiors?

A. That is right.

(Testimony of Earl Henry Spotswood.)

Q. And as a consequence of that, the Report TAC 79 was prepared, is that correct?

A. That is right.

Q. Did you ever make any tests of Core-Min-Oil cores baked in electric ovens?

A. Yes, I did.

Q. What kind of formula did you use for the Core-Min-Oil in those cores, the ones that you read a moment ago, consisting of 93 percent sand, 4.5 percent solution, and 2.5 percent asphalt emulsion?

A. The first actual experiment which I find in my TAC Report 79 on page 5, table 2, shows a core which was baked in the electric oven using 93.1 percent sand, 1.6 percent emulsion, and 5.3 percent Ruddell Solution.

Q. You made cores with that formula, and I take it from what you said, baked them in an electric oven?

A. That is correct.

Q. What kind of results did you get?

A. These cores were of even hardness.

Q. What do you mean by "hardness"?

A. I mean that they were uniformly hard over the whole surface.

Q. Solid in their surface texture?

A. That is right.

Q. Continue. What else did you note about them?

A. That is all I noted.

Q. Were any castings made with those cores?

A. No, they were not.

Q. Are you able to state from what you know,

(Testimony of Earl Henry Spotswood.)

from the studies you have made of core work on your work at the Vulcan Foundry, and in your observations at the Macauley Foundry, whether those were good, bad, or indifferent cores—anything like that? [372]

A. At the time the tests were made we didn't know whether they were good, bad, or indifferent. No tests were made to determine the various properties.

Q. Who do you mean by "we"; yourself?

A. Myself.

Q. You did not have any core experience at that time, and you would not know?

A. That is right.

The Court: Who had any core experience in this case? What is your thought of a good core?

Mr. Hackley: My personal thought?

The Court: Yes.

Mr. Hackley: I think it was defined by this witness who was on the stand this morning, or the two witnesses, I should say; I think they know a good core—a core which will have a good, hard surface, for the purpose of making a casting; be smooth, produce a smooth casting.

The Court: This electric furnace was not used in casting.

Mr. Hackley: Not a casting; a core, yes. He testified he made cores.

The Court: A core can't be tested until a casting is made.

Mr. Hackley: Not on these particular cores.

(Testimony of Earl Henry Spotswood.)

The Court: Why inject this electric process in here? What relation has it to the case or to the issues involved?

Mr. Hackley: It is just one of the types of furnace.

The Court: I can say to you, so you will understand it and know it clearly: It is the Court's thought it has no relation to the issues here involved, and will not be considered by this Court for any purpose.

Mr. Hackley: If it would be helpful to the Court, I will tell you what my theory was of it; if not, I won't waste the time of the Court. [373]

The Court: Don't waste the time of the Court.

Mr. Hackley: Q. Mr. Spotswood, how long did your tests continue on Core-Min-Oil cores, that is, cores made with the formula supplied by Mr. Ruddell and these variations of it that you have spoken of; where you varied the proportions?

A. I don't recall how long those experiments continued. I would have to check through my notebook and determine.

Q. Your notebooks do fix that time, do they?

A. I believe they do.

Q. And did you go to some other course of experiments in core oils after you stopped experimenting with the Ruddell formula?

A. Many different experiments were carried out.

Q. On other formulas?

(Testimony of Earl Henry Spotswood.)

A. On all types of formulas and all types of materials.

Q. Are all those reported in your notebook, or substantially all of them?

A. Substantially all of them are.

KENNETH A. WRIGHT,

Called for the Plaintiffs; sworn.

The Court: Q. Please state your full name to the Court.

A. Kenneth A. Wright. [374]

Direct Examination

Mr. Hackley: Q. State your full name, age, and residence address, please.

A. My full name is Kenneth Arling Wright, and my residence is 261 Montecito Avenue, Oakland, California.

Q. By whom are you employed?

A. I am employed by the Shell Development Company.

Q. At Emeryville? A. Yes.

Q. What is your capacity with the Shell Development Company?

A. I am a research chemist.

Q. How long have you been employed by them in that capacity?

A. I have been employed there in that capacity since July, 1938.

(Testimony of Kenneth A. Wright.)

Q. Prior to that what was your education and training, particularly with reference to your academic work?

A. I attended the University of Washington and received my Ph.D. degree in 1938.

Q. Did you take your degree in any particular subject?

A. I took my degree in chemistry and minored in physics.

Q. And went right from there to work in the Shell Oil Company?

A. That is correct.

Q. The Shell Development Company, pardon me; I made a mistake there. And have been working continuously with Shell Development ever since, I take it?

A. Yes, that is correct.

Q. What is the nature of your work with Shell Development Company, broadly? What type of work do you do?

A. Well, my first [375] work was in connection with the use of asphalt and research in it.

Q. Were you ever assigned to work with a product known as Core-Min-Oil?

A. Yes, I was.

Q. A so-called Ruddell product, or something of that sort?

A. I was assigned to prepare a stable mixture of water glass and asphalt emulsion, which, of course, is related to the Core-Min-Oil problems.

Q. By whom?

A. My immediate superior, A. P. Anderson.

Mr. Hackley: Q. Who is Mr. Anderson?

(Testimony of Kenneth A. Wright.)

A. Mr. Anderson was my immediate superior. He worked under Mr. Van Doormaal.

Q. And he, in turn, was under Dr. Tuemmler?

A. No.

Q. Wasn't there a Doctor Tuemmler over there at the Shell Development Company?

A. Yes; he is in charge of the analytical department.

Q. You come under Doctor Tuemmler, do you?

A. No, I do not.

Q. Will you tell us what you did, broadly, with reference to work, in attempting to make a stable, I believe you said, a stable emulsion?

A. A stable mixture——

Q. Mixture of Core-Min-Oil?

A. Will you repeat that question, please?

Q. You defined, a moment ago, that you had been instructed to try to prepare a stable mixture of two products. I don't remember what you said in that connection. I want you to describe that and fix it as to time.

A. I attempted to produce a stable mixture of water glass, or sodium silicate solution, and asphalt emulsion, and that occupied my time from the beginning of my work [376] at Shell Development, which was in August, 1938, up to about June, 1939.

Q. What did you do after June, 1939, relating to this core oil business—anything?

A. Well, that essentially completed my work in that line.

Q. Did you keep any notes of your work in

(Testimony of Kenneth A. Wright.)

connection with your attempts to produce a stable mixture of asphalt emulsion and water glass, or sodium silicate?

A. I kept daily notes in my record books.

Q. I am not sure which you refer to as your record books. Are they these two notebooks which I show you?

A. Yes, that is right. I recognize them.

Q. These are both your own notebooks kept by you, are they, Doctor Wright? A. Yes.

Q. Will you just tell me which of these is the first of your two notebooks in point of time?

A. This is the book, No. 1.

Q. And this book has throughout it notes relating to your work in connection with this core oil? A. Yes.

Q. There are other things mentioned in this notebook, are there not? A. Yes.

Mr. Hackley: I offer as Plaintiffs' Exhibit 51 those parts of the notebook of the witness identified by the witness as his Lab. Notebook No. 1, as directed to the subject of core oil.

I understand, Mr. Aurich, there are other things in this book which we are not offering.

And I offer as Plaintiffs' Exhibit 51-A those same parts included in Exhibit 51 comprising photostat copies of the notes of the witness, which are the parts which I include in the offer of Exhibit 51. In other words, the photostats are a segregation of the notebook, photostatic reproductions. [377]

(Testimony of Kenneth A. Wright.)

(The portion of the notebook referred to were marked Plaintiffs' Exhibit No. 51 in evidence.)

(The photostatic copies of portions of the notebook were marked Plaintiffs' Exhibit No. 51-A in evidence.)

The Court: For the purpose of the record, what is the purpose of the offer?

Mr. Hackley: The offer of the last part?

The Court: All of the notes of this witness on the stand.

Mr. Hackley: They define precisely what the Shell Oil Company was doing during the period when they are supposed to be marketing Core-Min-Oil, and show that the Shell Oil Company, as far as this witness was concerned—I am eliminating all others—was not performing the terms of that contract in making any effort to sell this product, but were experimenting with other products, trying to find some way of producing a core oil without utilization of the precise disclosures of my client, and thereby getting around the contract, and as the evidence will bring out, they succeeded in just that, developing another product using asphalt and another medium with it, for the purpose for which Core-Min-Oil was designed, and then after finding that, and after having held Core-Min-Oil off the market, terminated this contract so they could sell their product without paying a royalty to Peck and Ruddie as the contract provided. These notes, without taking the time to read them now, all build

(Testimony of Kenneth A. Wright.)

up that picture step by step and page by page. I might say the deposition of this witness was taken earlier in the case for the purpose of isolating those facts, and that was accomplished.

Mr. Aurich: The only point I want to point out to your Honor—I do not know whether your Honor cares to have me argue the objection or not—but this book is not quite a book that can be [378] understood by anybody, and it is not self-evident from this book what this witness was doing. This book, taken alone, would be absolutely meaningless to anybody other than a highly-skilled, trained chemist.

The Court: That was the purpose of my inquiry.

Mr. Aurich: Yes, your Honor.

The Court: I can say to you, as well as to your opponent, at this time they do not mean anything to me, and for the purpose of this case I just want to call his attention and indicate to him we are wasting a lot of time without accomplishing anything.

Proceed.

Mr. Hackley: Q. You have identified a second notebook there, have you, Doctor Wright, as the balance of your notes on the subject of core oil?

A. Yes.

Mr. Hackley: I offer as Exhibit 52 the last set of notes identified by the witness, in so far as that notebook contains core oil references, and to identify what I mean by that, I offer as Exhibit 52-A photostatic copies of those parts of Exhibit 52 to which we will address ourselves in this case.

(Testimony of Kenneth A. Wright.)

(The portions of the notebook referred to were marked Plaintiffs' Exhibit No. 52 in evidence.)

(The photostatic copies of the portions of the notebook were marked Plaintiffs' Exhibit No. 52-A in evidence.)

Mr. Hackley: Q. Did you prepare any reports relating to your work in connection with the Core-Min-Oil subject, or the core oil subject, I should say? A. Yes, I did.

Mr. Aurich: I will stipulate, Mr. Hackley, the two documents you have in your hand were prepared by the witness.

Mr. Hackley: And that I may offer them without further identification? [379]

Mr. Aurich: Certainly.

Mr. Hackley: Q. The notebooks are yours, are they, Doctor Wright?

A. The reports, you mean?

Q. Yes; the reports.

A. Yes, they are mine.

Mr. Hackley: I offer as Plaintiffs' Exhibit 53, the first of the reports of the witness, dated January 10, 1939, entitled, "Methods of Producing Stable Bituminous Dispersions in Water Glass Solutions of High Concentration," and the second, dated August 25, 1939, entitled, "Core Oil Mixtures," as Plaintiffs' Exhibit 54.

(The reports referred to were marked Plain-

(Testimony of Kenneth A. Wright.)

tiffs' Exhibits Nos. 53 and 54, respectively, in evidence.)

Mr. Hackley: Q. Doctor Wright, you have spoken of a water glass solution. What was that water glass solution that you worked with?

A. A solution of sodium silicate and water.

Q. Were there any other chemicals mixed with the sodium silicate, such as sodium fluosilicate or aluminum sulphate?

A. Not put in directly; there may have been impurities, which I do not know.

Q. And you made no determination of those and did not add them to the work?

A. No, I did not.

Q. Were you successful in developing the product you set out to make, that is, a stable mixture of asphalt emulsion and sodium silicate, water glass?

A. I felt that I was successful to a considerable degree.

Q. Just what do you mean by that?

A. I mean by that I could prepare mixtures which would remain homogenous; that is, they would not separate; and which would stand a considerable length of time without any appreciable degree of separation.

Q. I show you your testimony given in the deposition. You recall you gave a deposition in this case? A. Yes. [380]

Q. On February 21, 1941, and again on Febru-

(Testimony of Kenneth A. Wright.)

ary 27, 1941. And I call your attention to the fact there that you testified at page 11, lines 15 and 16, with reference to this product, and I will show you the record so you can identify it:

“Q. Were you successful in developing that product?

“A. Finally we were successful.”

There referring to this product of water glass and asphalt emulsion. A. Yes.

Q. That was your testimony, was it not?

A. That is correct.

Q. Is the successful test that you refer to in your last testimony set forth in your notebooks? And I think I may save your time by calling your attention to the fact that I so understood your testimony at the time of your deposition. You testified there as follows, and I will show you the record so that you can follow it:

Mr. Aurich: Mr. Hackley, why don't you ask him the question now, instead of reading into the record his deposition at a prior time, which is not admissible?

Mr. Hackley: Mr. Aurich, I am not interested in a deposition of this witness——

The Court: You are not entitled to the record unless there is a conflict in his testimony.

Mr. Hackley: Q. I will ask you, Doctor Wright, if your notes do show the results of those tests that were just referred to?

(Testimony of Kenneth A. Wright.)

A. I indicated in my notes mixtures which at the time I considered quite stable.

Q. Do you remember where that was in your notes?

A. As I recall, I believe they refer to the Z series, Experimental Mixtures, and not prepared on a large scale. They were, as I [381] remember, in the early part of the second book.

The Court: Regardless of where they are, the witness is here. Ask him directly what the situation is. Depositions have no place here unless there is a contradiction or conflict in the evidence.

Mr. Hackley: Q. Doctor Wright, is this your second notebook that you refer to?

A. Yes, it is.

Q. Will you call attention, for the record, to what part of the second notebook these notes are contained in? The page of your notebook would be enough for this record.

A. I have indicated on page 3 some mixtures that I consider quite stable.

Mr. Hackley: Q. What is the date of the entry?

A. The date is December 23, 1938.

Q. After you had concluded your work that you have indicated on preparation of stable emulsion, a stable solution of asphalt emulsion and water glass, what was your next assignment relating to core oils with the Shell Development Company?

A. Our next assignment was to adapt these mixtures so that they would be stable for use in a foundry for preparing cores.

(Testimony of Kenneth A. Wright.)

Q. What did you do in that connection?

A. I worked in cooperation with Mr. Spiri and Mr. Spotswood.

Q. Who is Mr. Spiri? A. Mr. Spiri?

Q. Yes.

A. He is a gentleman who was working for Shell Development at that time, and at present I believe is working for Associated Oil.

Q. What did you do in your work with these two men?

A. These two men conducted tests with my mixtures at the foundry [382] and made observations as to the success or failures of these tests, and they would make reports to me concerning these, and I would attempt to improve the mixtures so as to overcome the various difficulties that they mentioned.

Q. What formulas were you working with in this period? Was this the formula of asphalt emulsion and sodium silicate?

A. I worked with various formulae, one of which was the one I have previously mentioned, namely, asphalt emulsion and sodium silicate.

Q. What other formulas?

A. Other formulas contained petroleum products, other petroleum products, such as furfural extract and albino asphalt, and similar products. By "albino asphalt" I mean material that is not truly an asphalt.

Q. Do you know whether or not anybody else

(Testimony of Kenneth A. Wright.)

than yourself was doing any work attempting to make a stable solution of asphalt emulsion and sodium silicate, or any other product of that type?

A. Well, I had an assistant under me, Philip Short, who was working with me and merely preparing the mixtures.

Q. There was no one else in any other part of the company that you know of doing the same work?

A. No.

Q. Did you ever make any attempts to make a stable solution of asphalt emulsion and sodium silicate, sodium fluosilicate, aluminum sulphate, and water?

A. I remember a few qualitative tests, or rather — remember where I made a few mixtures, where I made qualitative observations, and came to the conclusion that the mixtures were not stable.

Q. Will you explain that a little further? What do you mean by that?

A. I received some Ruddle's Solution——

Q. The product that I have described is what you know as "Ruddle's Solution" and asphalt emulsion?

A. What is that?

Q. The product that I just described to you is Ruddle Solution, is [383] that correct?

A. Yes.

Q. As far as ingredients are concerned?

A. Essentially so. I received some Ruddle's Solution, I believe, from Mr. Spotswood, and I prepared these mixtures, using asphalt emulsion and

(Testimony of Kenneth A. Wright.)

Ruddle's Solution, and allowed them to stand, and I observed that they separated readily.

Q. Did you ever make any effort to find some method of making those products remain in an emulsified form?

A. I made no effort to use Ruddie's Solution as such with asphalt emulsion to prepare stable mixtures.

Q. By the way, you have read your deposition very recently, haven't you? A. Yes, I have.

Q. Within the last few days? A. Yes.

Mr. Aurich: That was done at your request, Mr. Hackley?

Mr. Hackley: Yes; done when I asked the witness to sign it—at least, I assume that was the time, because that was within the last few days.

Q. Do you believe from your study of the Ruddie Solution that you, as a chemist, could render that solution stable in an emulsion with asphalt.

A. It is my opinion that I could render it equally stable as a water glass solution.

Q. Were you ever asked to do that by anybody in the company? A. No, I was not.

Q. You spoke of this additional work which was done after you completed your work on the water glass and asphalt emulsion, attempting to make that mixture, and the work that you did there; can you give us a little further general picture of what you were doing during that period, and give us the starting and ending points of that work, if any?

(Testimony of Kenneth A. Wright.)

Mr. Aurich: May the witness look at his book?

[384]

Mr. Hackley: Yes; certainly.

Q. By the way, Doctor Wright, you are welcome to look at those notes at any time, but if you do refer to the notes or use them in your testimony, I wish you would state so on the record.

A. Well, I will try to recall from memory what I did.

Q. I just want a general picture of it; that will be sufficient. If you want to use or refer to any of these reports, you may do so, particularly if that work is summarized in any of your reports, you can mention it.

A. In the early part of the second division of my work I attempted to overcome some difficulties which were mentioned by Mr. Spotswood, I believe, and Mr. Spiri, wherein they stated that these core oil mixtures which I had prepared, and which I considered stable, or fairly stable, these core oil mixtures, when mixed with sand, were not as workable as desired; that is, the sand would either stick to the foundry cope, and secondly, the mixtures would not hold together as well as they should, and so I attempted to modify the formula which I had previously established, in order to overcome these difficulties.

Q. On whose instruction, by the way, were you doing this work—Mr. Anderson's?

Q. All right, continue.

(Testimony of Kenneth A. Wright.)

A. As time went on, other difficulties were brought forward, such as pellet formation. The core oil mixtures, when mixed with the sand——

Q. You are now speaking of this product made with asphalt emulsion and water glass?

A. In all cases I am speaking of that product.

Q. Of that product alone, yes. Continue.

A. The core oil mixtures, when mixed with sand, would form small pellets in the sand, which could not be mixed homogenously without a great deal of difficulty, and so I attempted to modify the formula to overcome this difficulty and other difficulties, quite a number of [385] which I do not believe I will mention at this time, were encountered, and in each case I attempted to modify the formula to overcome the difficulties. And in many cases I was successful to a degree. In other cases I was completely unsuccessful and, as I remember, the last thing I did in connection with core oil mixture was to try to improve—that is, the sand mixes, when left exposed on the bench, would tend to dry very rapidly, and I attempted, by the addition of certain agents, to make a mixture to overcome this particular difficulty.

Q. The long and the short of it is that you did work out a product, you and those working with you, which was satisfactory from the standpoint of overcoming these problems, and so reported to the company?

A. Well, it is my opinion that we were never completely successful.

(Testimony of Kenneth A. Wright.)

Mr. Hackley: Q. Who was the Mr. W. J. Hund who signed the Shell Development Company report, a part of your report Exhibit 54?

A. Mr. Hund is one of the assistant directors, I believe.

Q. Of the Shell Development Company?

A. At the time when he signed that report.

Q. I want you to turn to your report, Exhibit 54—

The Court: If there was anything in these various transactions in relation to the evidence adduced here in the last three days in any way successful, the Court has failed to discover it.

Mr. Hackley: I think we are just at the point of showing to your Honor that we have exactly that type of evidence, and I propose to read this report—

The Court: Your extravagant statements in relation to what you are doing and what you have done have not impressed me very [386] much.

Mr. Hackley: I will read the report and, of course, ask it speak for itself.

The Court: Proceed.

Q. That is the first document in your folio, or Exhibit 54, Doctor Wright?

A. If you refer to the letter, it is evident that W. J. Hund wrote it, because he signed it.

Q. Do you know the stenographic initials on that report? A. "A. P. A."

Q. That is who?

(Testimony of Kenneth A. Wright.)

A. It refers to A. P. Anderson.

Q. And N. D. I suppose, is the stenographer?

A. I believe that refers to Norman Davis, the stenographer.

Q. The report annexed to the letter of September 6, 1939, is one which was prepared by yourself and Mr. Anderson, is that correct?

A. Mr. Anderson reviewed and offered suggestions to the report. I wrote the report personally.

Mr. Hackley: Because, your Honor, I think these two documents are extremely important, and I am going to ask leave to read them [387] to the Court at this point, and I think with the reading of these reports I will have closed the testimony of this witness.

This is a letter on the letterhead of Shell Oil Company under date of September 6, 1939, signed, as the witness stated, by W. J. Hund, with the stenographic initials of A. P. Anderson:

“SHELL DEVELOPMENT COMPANY

“Emeryville

“California

“Shell Development Company,

“Shell Building,

“San Francisco, California.

“Gentlemen:

“Core Oil Mixtures.

“We are pleased to enclose Emeryville Report No. 7000 entitled ‘Core Oil Mixtures’.”

(Testimony of Kenneth A. Wright.)

Q. Report No. 7000, Doctor Wright, is your own report, as you stated, reviewed by Mr. Anderson, which is annexed to the letter, is that correct, and part of Exhibit 54?

A. That is correct.

The Court: Who is the report to?

Mr. Hackley: It is a report to the Shell Development Company, your Honor.

The Court: Proceed.

Mr. Hackley (continuing reading): "In a previous report, Emeryville No. 4498, dated January 10, 1939, we discussed methods of producing stable dispersions of bituminous materials in water glass for use as sand-core binders in foundry practice. The present report is in part a continuation of the laboratory work on water glass emulsions and covers the adjustments of the formulae to actual [388] foundry practice. The actual detail of the foundry experiments is given in a report by Messrs. Spiri and Spotswood, re: 'Core Oils containing Sodium Silicate' which was forwarded to the Hague"—

Q. What is meant by "the Hague," Doctor Wright?

A. That, at the time, was the headquarters of the Shell, the Dutch Shell Company.

Q. That is at The Hague, Holland, or the Netherlands?

A. The Hague, Netherlands.

Mr. Hackley (continuing reading): ——"was

(Testimony of Kenneth A. Wright.)

forwarded to the Hague by your letter No. D-646 dated August 7, 1939. In addition core oil mixtures consisting of emulsions that contain no water glass and blends of linseed oil with bituminous materials such as Albino asphalt, which are referred to in the last paragraph of your letter D-646, are covered.

“It was found that by using low penetration index materials such as cracked asphalts and extract fractions, emulsions could be prepared with very low penetration materials. With these low penetration materials the amount of sodium silicate required to give strength decreased until at 2 or 3 penetration it is no longer required. Therefore in view of the additional costs for the silicate mixtures it was decided to abandon them in favor of the other types of core oil mixtures.

“The low penetration asphalt emulsion core binders have the advantages of not being affected by CO_2 , shorter baking time, lack of sensitivity to over-baking and of having no tendency to soften at high humidities. Their main disadvantage is that the emulsion will dry out on standing in the sand mixes; however, this can be overcome [389] by keeping the emulsions and sand mixes in closed containers.

“The linseed blends with extract fractions”

(Testimony of Kenneth A. Wright.)

Q. An extract fraction is an asphalt product, isn't it, Doctor Wright?

A. It is a petroleum product.

Q. What would you call it as a petroleum product? I am not familiar with that art at all.

A. It does not contain asphalt. Asphalt is a different type of material, although it is a residue, in general.

Q. Is the extract fraction what is known as an albino asphalt?

A. An albino asphalt, the asphalt being a misnomer, is generally an overhead, or rather, a distilled product from some of those extract fractions. Also, extract fraction may refer to various distillation cuts from extract residues. Extract residue is the residue obtained from certain petroleum and mining operations.

Q. The extract fraction referred to here is what is commonly called albino asphalt, isn't it?

A. It may include that.

Q. That may be one of them, is that it?

A. Yes.

Q. And that is a product of the Shell Oil Company?

A. It is a product—I don't know if they produce it commercially or not.

Mr. Hackley (continuing reading): "The linseed blends with extract fractions give core oils which appear to have all of the good characteristics of linseed oil. Blends containing as

(Testimony of Kenneth A. Wright.)

much as 60-70% extract fractions give results that are comparable with 100% linseed oil although the extract fractions by themselves are valueless as core oils. The penetration of the extract fraction does not appear to have a marked influence so that in some cases the original extract might be used. [390] Cracked materials with low asphaltene content from mild cracking operations might also be used.

“Information is included in this report on the optimum combinations of materials, baking temperature and baking time and on the influence of sand-core oil ratios.”

This next paragraph, your Honor, I believe, is extremely significant in this case, when it is remembered this letter was written almost two months after Shell attempted to cancel its contract, after Mr. McLaren's letter we saw here yesterday:

“We believe that sufficient information is given for initial sales promotion work. After foundries have been contacted it will undoubtedly be found that many of them have special problems which will require additional testing. Since these problems will probably continually arise we have included in the appendix to the report the information necessary for laboratory testing of core oils.

“The Patent Department have requested that compositions of the core oils made from low penetration emulsions and from linseed-extract

(Testimony of Kenneth A. Wright.)

fraction mixtures be not disclosed to outsiders and be kept within as small a circle of Group employees as feasible for the promotion of these products.

“Yours very truly,

“SHELL DEVELOPMENT
COMPANY

“W. J. Hund”

Q. What is referred to there as “Group employees,” Doctor Wright?

A. I suppose—inasmuch as I did not write the letter, I do not really know, but I suppose that they are referring to all persons connected with Shell. [391]

Q. That is, the different Shell companies, Shell Development Company, Shell Oil Company, Incorporated, and so on, is that right?

A. I suppose so.

Q. That is the way, as a matter of fact, that term is used in your company?

A. I have never used the word before, so I don’t really know.

Q. Then annexed to that letter, Doctor Wright, is the report prepared by yourself and reviewed by Mr. Anderson, that you have referred to, which is dated August 25, 1939, is that correct?

A. Yes, that is correct.

Q. And that report is the report upon which Mr. Hund’s letter is based, is that correct?

A. Well, it is evident, I believe. It must be so.

(Testimony of Kenneth A. Wright.)

Q. And the material annexed to the report, comprising charts, graphs, and, oh, some 40 pages of detailed notes, are included in here as exhibits to the report prepared by you and edited by Mr. Anderson, is that right?

A. Yes, that is correct.

Q. I will put it another way: Do I understand that the list of firms, concerns or places listed on page 3 of your report comprise the places to which your reports were distributed, and the number of copies distributed to those points?

A. That is ordinarily correct. I believe it is correct in this case. [392]

Q. Now, will you just read that report and identify the men whose names are referred to there, in so far as you know who they are? The first one is four copies went to The Hague, Mr. Bastet. Now, who is Mr. Bastet?

A. I can't identify any of those names.

Q. You do not know him at all, do not know of him?

A. There are three men there which I can say—Mr. Bastet, Mr. J. C. van Eck, and Mr. Pyzel—I have never had any personal contact with any of the men.

Q. You do not know them at all?

A. They are not connected in any way with Shell Development, that I know.

Q. They might be perfect strangers to the company, for all you know?

(Testimony of Kenneth A. Wright.)

A. Well, I know they are connected with the company, but that is all.

Q. But you do not know which particular one of the companies they are connected with, of the Shell companies, is that right?

A. No, I do not.

Mr. Hackley: I would like to read this list to your Honor:

Four copies to The Hague, and three to the Amsterdam Laboratory, two to Mr. J. C. van Eck, London, one to Mr. D. Pyzel, New York, one to Shell Oil Company, Incorporated, Asphalt Department, New York, one to Shell Oil Company, Incorporated, Technical Products Department, New York, eight to Shell Oil Company, Incorporated, Manufacturing Department, St. Louis, one to Shell Oil Company, Incorporated, Asphalt Sales Department, St. Louis, one to Shell Oil Company, Incorporated, Technical Products Department, St. Louis, one to Shell Oil Company, Incorporated, Wood River, Attention: Doctor Edlund.

Q. Where is Wood River?

A. Wood River refers to the refinery at St. Louis. [393]

Mr. Hackley: Three to Shell Oil Company, Incorporated, Manufacturing Department, San Francisco, one to Shell Oil Company, Incorporated, Asphalt Sales Department, San Francisco, one to Shell Development Company, San Francisco, and one to the Patent Department, San Francisco.

(Testimony of Kenneth A. Wright.)

Q. I have correctly read the list, have I, Doctor Wright? A. Yes.

Mr. Hackley: That is all with this witness.

Mr. Aurich: No questions.

The Court: Step down.

Mr. Aurich: For your Honor's information, I feel I must say this: I intend to call this witness as my own witness in the defendants' case, and I assure your Honor we will thoroughly explain all the pertinent notations in the notebook, so that they will be readily understandable.

Mr. Hackley: Mr. McSwain.

Mr. Aurich: If your Honor please, we are getting into more and more utter confusion. Mr. McSwain was here yesterday, and I started with opening the defendants' case. Now Mr. Hackley wants to call him for some reason I do not know. He can cross examine him when I get through. It seems to me we are getting hopelessly confused.

Mr. Hackley: Your Honor, I have no objection to letting this matter go until I reach the stage of cross examining. The only thing that disturbs me is I had planned, as I stated yesterday, to call Mr. McSwain as part of my opening case, and Mr. Aurich brought some motions here to dismiss. I want to meet those motions.

Mr. Aurich: If you think Mr. McSwain can help you on those motions, I certainly have no objection to his taking the stand.

Mr. Hackley: I will be just a moment, Mr. McSwain. [394]

JOHN F. McSWAIN,

Called for the Plaintiffs; Previously sworn.

Direct Examination

Mr. Hackley: Q. Mr. McSwain, you have been identified as the head of the asphalt department of the Shell Oil Company, Incorporated, is that correct?

A. Yes.

Q. And you are in charge of asphalt sales, are you, in that department?

A. On the Pacific Coast.

Q. I believe you testified that you are familiar with the Core-Min-Oil subject and all its ramifications?

A. Well, I wouldn't say all of its technical ramifications that I have heard here discussed this afternoon; I am familiar with the general handling of the core oil situation.

Q. It has been more or less under your personal jurisdiction during the time it has been considered by the company, is that correct?

A. In so far as my sales efforts might be concerned.

Q. That is just exactly the point there. Can you tell me whether or not the Shell Oil Company ever attempted to sell so much as one gallon of Core-Min-Oil to anybody during this entire time, from the time it first heard of Core-Min-Oil down to the present day?

A. What do you mean by attempting to sell?

(Testimony of John F. McSwain.)

Q. Offered it to foundries and said, "Here, we are ready to deliver it. Buy it."

A. In those words?

Q. Well, I can't say the words; I want to know the facts.

A. We undertook a sales promotion program after we had signed the contract with Peck and Ruddle. There was no background for this material, which we thought at that time had possibilities. There was no history. It had never been used in a commercial foundry. So we undertook to develop information regarding that material so we could walk into a foundryman's desk and say, "This is what this [395] material will do."

Q. Did you ever walk into a foundryman and say, "Here is Core-Min-Oil. It will do so-and-so. We would like you to buy it?"

A. We couldn't stultify ourselves to that extent. We never even had a product that we could even offer.

Mr. Hackley: Your Honor, I ask that the answer be stricken as not responsive to the question.

The Court: No; it is very pertinent here. He simply makes a statement in no uncertain way, "We simply did not have a product we could offer." I think that goes to the very heart of this case.

Mr. Hackley: The record belies the witness.

The Court: What is that?

Mr. Hackley: I say the record belies the witness on that.

(Testimony of John F. McSwain.)

The Court: That is your statement, only.

Mr. Hackley: Yes.

The Court: It is not of a great deal of value.

Mr. Hackley: Your Honor, I asked this witness——

The Court: The record will stand. Proceed.

Mr. Hackley: Q. Mr. McSwain, can you tell me a single company that you offered to sell Core-Min-Oil to?

A. Well, of course, that word “offer” is one that would require a definition before I can answer that question properly. We moved into the Vulcan Foundry on the theory that we had to get this material into commercial use in at least one foundry where it would be used as a run-of-the-mill product, so we could go to other foundries and tell what was done. We never had a material that the Vulcan Foundry could use in their commercial operations. It never got beyond the laboratory stage.

Q. On what do you base that statement?

A. Well, I base that statement upon innumerable reports that came to me from the [396] men who were working with it.

Q. That is, your employees?

A. Employees of the Shell Oil Company.

Q. That is what I mean. Did you ever attempt to interest any foundry using electric ovens, in Core-Min-Oil?

A. Well, I think that my first answer answers that question.

(Testimony of John F. McSwain.)

Mr. Hackley: If your Honor please, I move to strike the answer as not responsive.

The Court: Let the record stand. Proceed.

Mr. Hackley: Q. You are familiar with the fact that there are foundries that use electric ovens, aren't you, Mr. McSwain?

A. Well, I have been told so.

Q. Well, in your capacity as manager of this department of the great Shell Oil Company, you know that as a fact, don't you?

A. No, I do not.

Q. You have never made an investigation of the electric oven foundry market?

A. No, we did not.

Q. You can't tell me today the name of a single foundry using an electric oven?

A. I cannot name a single foundry that I know of that is using an electric oven.

Q. Have you ever known of one, to your knowledge today?

The Court: Do you know one?

Mr. Hackley: Yes, I do, your Honor.

The Court: Who?

Mr. Hackley: I have a long list of them right here; right here in San Francisco Bay, the Yuba Gold Dredge Company, which uses nothing but electric ovens, at Benicia. Down in Los Angeles——

The Court: Wait a minute; wait a minute. The Natomas Company?

Mr. Hackley: No. The Yuba Consolidated Gold-

(Testimony of John F. McSwain.)

fields have a foundry at Benicia. At that foundry they have electric ovens.

The Court: Just a minute, now. [397]

Mr. Hackley: Yes, your Honor.

The Court: You are rather reckless in your statement. If there are a half-dozen of men working at Benicia with an electric oven, I am misinformed. I am going beyond this record. The only reason I am saying that is just to have you realize that you are making some statements that won't be justified. The Yuba company, as a matter of fact, had suspended their foundry end of it for years. They may be operating now; I do not know.

Mr. Hackley: I am only quoting information which I received last week, your Honor. I have never been to the plant.

The Court: I don't know, either.

Mr. Hackley: You asked me if I had ever known of a single foundry. Yes. For example, the Worman Steel Casting Company in Los Angeles used electric ovens.

The Court: How do you know that?

Mr. Hackley: I have a letter—this is not evidence, and I hope you will understand I am not testifying——

The Court: I am interested, myself.

Mr. Hackley: The Young Brothers Company, industrial oven manufacturers, at Detroit, Michigan, advises that the following companies all use electric foundry ovens only, or if not only, largely:

(Testimony of John F. McSwain.)

One thus is the Vancouver Iron and Steel Company, Vancouver, Washington; the General Electric Company, Baltimore, Maryland; the Canadian Westinghouse, Ltd., Hamilton, Ontario, Canada; the Keokuk Steel Casting Company, Keokuk, Iowa, which I understand is a very large foundry; the Norfolk & Western Railroad Company at Roanoke, Virginia; the Westinghouse Electric Company, Pittsburgh, Pennsylvania—not a small company in itself, and, incidentally, a very large manufacturer of equipment for foundry ovens. [398]

The Court: When we adjourn today, we will have to adjourn to Tuesday. I should think for all our information some inquiry should be made in that respect.

Mr. Aurich: I have a man here, your Honor, who can give you the information which you want.

The Court: Who is he?

Mr. Aurich: This is a witness I expect to produce on behalf of the defendants.

The Court: I would be glad to hear what he has to say. I sit here and hear so many reckless statements made from day to day.

Mr. Aurich: May it please your Honor, may I introduce Mr. Harry W. Dietert, who is the owner of the H. W. Dietert Company of Detroit, Michigan, and he has had actual practical foundry experience for the past 20 years, and is now employed as a consultant for various foundries. He has worked up from a natural core-maker to chief

(Testimony of John F. McSwain.)

engineer of the United States Radiator Corporation, who are the operators of seven large foundries.

The Court: Are you familiar with the firms that were mentioned here?

Mr. Dietert: I am with some, yes.

The Court: Tell me about these electric furnaces. They were so expensive in my day they couldn't consider them.

Mr. Dietert: They are still in the same category, your Honor.

The Court: That was 40 years ago.

Mr. Dietert: Yes, and they are today. You can find them, it is true.

The Court: In isolated cases?

Mr. Dietert: That is right.

The Court: And on a small scale, on small cores.

Mr. Dietert: They have a fairly large one at General Electric [399] at West Linn.

The Court: You know, I worked with the General Electric at Schenectady.

Mr. Dietert: I did not know that, your Honor.

The Court: Oh, yes. That is the reason I can't sit idly by here and listen to what I have listened to in the last few days and mislead anyone. I hope that I never get so judicial that I try to mislead anyone at all. This record would be a record for anybody to read that thought he knew something about the foundry business, or cores, or core-making. It is food for thought.

(Testimony of John E. McSwain.)

Mr. Dietert: You can count the electric furnaces, core ovens, on your hand. There are only a dozen out of—let's see—there are over 4,000 foundries in the American States, and let us say there are a dozen foundries using them, and most of them, like Westinghouse and Canadian Electric and General Electric, why, they were trying to sell those electric ovens to foundries; they use them, and they are still there, and some places where they do not have good fuel handy, they may be using electric .

The Court: This sort of procedure is not known in our Federal Courts, but I do this for the benefit of those who may have an interest to come here. I can't get away from it. Our function is to try and do the thing that we are expected to do. Thank you for your information. I was wondering if I was wrong.

Mr. Aurich: I may say, your Honor, Mr. Dietert is going to be an expert on behalf of the defendants, to tell us all something about the art of core-making.

Mr. Hackley: I might say in this list I have here, your Honor, alone, there are 12 foundries all using electric ovens, which are named. I can't tell your Honor how large or small they are, but I have heard of such ovens. [400]

The Court: There is sufficient here to have you now not waste your time further. Proceed.

Mr. Hackley: Q. As part of the sales pro-

(Testimony of John F. McSwain.)

gram, attempting to carry out the terms of the contract, Exhibit 5, did you, or anybody in connection with your company, to your knowledge, ever attempt to survey the market for electric ovens?

Mr. Aurich: What was that question?

(Question read.)

Mr. Aurich: There is nothing in the contract that called upon the Shell Company to make any search of any market.

Mr. Hackley: Ah, but there is something in the contract to the effect that Shell Company has undertaken an obligation to sell Core-Min-Oil, and that means to sell it; that does not mean "I don't want to sell it because I don't want to stultify myself."

The Court: Did you make an objection?

Mr. Aurich: I object on the grounds stated.

The Court: I sustain the objection.

Mr. Hackley: No further questions.

Mr. Aurich: That is all, Mr. McSwain.

BERNARD JAN GRATAMA,

called for the Plaintiffs; sworn.

The Clerk: Q. Please state your full name to the Court.

A. Bernard Jan Gratama.

Mr. Aurich: Q. Will you please keep your voice up while you are on the stand so I may hear you?

A. All right.

Direct Examination

Mr. Hackley: Q. What is your occupation?

A. Manager of the patent department of the Shell Development Company. [401]

Q. In San Francisco?

A. In San Francisco.

Q. How long have you held that job?

A. Sixteen years.

Q. All that time in San Francisco?

A. Yes.

Q. Are you an attorney-at-law? A. Yes.

Q. When were you admitted to practice?

A. '28.

Q. In California? A. In California.

Q. Do you recall that you were directed to handle the prosecution before the United States Patent Office of certain applications for patent, in which one Allan B. Ruddie was the applicant?

Mr. Aurich: May I hear the first part of that question?

(Question read.)

(Testimony of Bernard Jan Gratama.)

Mr. Aurich: I do not understand what you mean by "directed," Mr. Hackley. Do you mind explaining that?

Mr. Hackley: I think the witness knows what I mean by it.

The Witness: No, I do not, either.

Mr. Hackley: Q. You do not. Well, do you understand the word "employ"?

A. What I think you are driving at is after we made the agreement with Messrs. Peck and Ruddie, at their request we took over the prosecution of some application which they were handling. I did not do it personally, but it was done in my office.

Q. By "agreement," do you mean the agreement, Exhibit 5, which I am showing you?

A. After this agreement was executed, yes.

Q. And you continued to handle the prosecution of those applications for patent for some time?

A. Yes.

Q. And you prosecuted the application for patent of Allan B. Ruddie and one Earl H. Spotswood as joint applicants, relating again to the general subject of core oil?

A. Offhand I would say yes, that was one of the cases.

Q. I show you two patents; one is Plaintiff's Exhibit 1 and the [402] other is Plaintiff's Exhibit 2, and I ask you if these are two of the patents I have referred to, or the applications——

Mr. Aurich: Unless you want the witness to

(Testimony of Bernard Jan Gratama.)

particularly answer, Mr. Hackley, I will stipulate to that.

Mr. Hackley: And you will stipulate that he filed, or under his direction there was filed the Spotswood-Ruddle patent application?

Mr. Aurich: I believe that application was filed by Mr. Zublin, and that being the fact, I will stipulate to it. Mr. Zublin was under Mr. Gratama's supervision, indirectly.

Mr. Hackley: I have here, your Honor, a file of correspondence which passed between the parties subsequent to the making of the contract and down to the time of the receipt of the alleged notice of cancellation. There are parts of this file which undoubtedly of little weight so far as this proceeding is concerned; but in order to present to the Court those parts which I will rely upon in my case, I have included every communication, or attempted to include a copy of every communication going in each direction. Mr. Aurich has stated, very kindly, he will not object to the form of these documents, or require further identification of them, and I state the offer is made with the understanding it is intended to be a complete file, and if there is anything omitted, you may substitute it, Mr. Aurich, if you wish. Therefore, I offer a file of correspondence covering the period April 8, 1938, to and including July 26, 1938, as Plaintiff's Exhibit 55.

Mr. Aurich: Mr. Hackley's statement is correct, your Honor, in that I do not object to the

(Testimony of Bernard Jan Gratama.)

lack of foundation or authentication. [403] However, I have not had an opportunity to compare them, and it is subject to correction if error is found. However, I do have a serious objection to the materiality, the cluttering up of an already overburdened record, with a mass of immaterial letters such as, say, "We are sending you herewith our files of October 18th. After you have looked it over, let us have your opinion."

The Court: Admitted.

(The file of correspondence referred to was marked Plaintiff's Exhibit No. 55 in evidence.)

Mr. Hackley: The plaintiff rests its case in chief, your Honor.

(Plaintiffs rest.)

Mr. Aurich: At this time, your Honor, I would like to renew my motion to dismiss on the grounds I mentioned yesterday afternoon. I could argue it, but I do not propose to do so unless your Honor desires me to do so.

The Court: For the purpose of the record, the motion will be denied.

Mr. Aurich: As to both defendants?

The Court: As to both defendants, at this time.

Mr. Aurich: Mr. Dietert, will you take the stand?

Mr. Hackley: Your Honor, I think we have a

witness, Mr. McSwain, on the stand. Shouldn't we complete his examination?

Mr. Aurich: I think these matters have been so mixed up, your Honor, in view of the recent developments in the plaintiff's case, of which I had no knowledge yesterday, I believe I should be permitted to proceed in my own way.

The Court: Why?

Mr. Aurich: Why shouldn't I put Mr. McSwain on? [404]

The Court: How can counsel here suggest your order of proof?

Mr. Aurich: Counsel can't.

The Court: Proceed.

Mr. Aurich: Mr. Dietert, will you be sworn?

Mr. Hackley: I was merely asking your Honor. I am not trying to instruct Mr. Aurich how to try his case, but I think the orderly process is to finish with one witness before another one is called.

The Court: That does not apply to all the witnesses. Proceed.

HARRY W. DIETERT,

Called for the Defendants; sworn.

Direct Examination

Mr. Aurich: Q. Will you please state your age?

A. My age is 45.

Q. And your residence?

A. 12 315 Broad Street Boulevard, Detroit, Michigan.

(Testimony of Harry W. Dietert.)

Q. And your occupation?

A. My occupation is manufacturer and foundry consultant.

Q. In what lines are you a manufacturer?

A. I manufacture a complete line of foundry sand and core-testing equipment under specifications of the American Foundry Association. I also manufacture a line of moisture-testing equipment and spectrographic analysis.

Q. Do you maintain a laboratory at your place of business?

A. Yes, I do.

Q. What, generally, is the purpose of maintaining that laboratory?

A. I use this laboratory to connect up theoretical ideas with foundry practice. In other words, I have a complete line of [405] testing equipment which gives me the test data. I take the test data and then I go into the foundry and put into foundry practice the test data, and arrive at the answer a lot faster than without either.

This laboratory is maintained by several companies to determine whether or not their product is suitable, or whether or not their product comes up to a set standard quality. Laboratories also used to settle disputes between shipper and consumer—in other words, we act as arbitrators, in the sense they take our word for it, what we say—of course, we also use the laboratory to develop new foundry materials.

Q. The name of your company is the Harry W.

(Testimony of Harry W. Dietert.)

Dietert Company, and you are the owner of that company?

A. That is the name and I am the owner.

Q. How long have you owned that company, Mr. Dietert?

A. I have owned that company since 1925.

Q. Will you please state what training and experience you have had in foundry practice?

A. Just in foundry practice, or my college training, too?

Q. Include your college training also, please.

A. I finished Iowa State College in 1920; obtained a degree of Bachelor of Science and Mechanical Engineer. Immediately thereafter I went with Westinghouse Electric Manufacturing Company of East Pittsburgh, Pennsylvania, as a technical apprentice. We went through different departments of their plants—entirely practical work, to train college men so they knew the practical end. While there I had training in the foundry, in the machine shop, did actual molding and core-making. I did also in college. I stayed there 14 months, and in 1921, 1922,—that is, nine months—I took the position as foundry instructor and machine shop instructor [406] at Rice Institute, Houston, Texas. After that school year I returned to Westinghouse and the foundry. I there worked directly under the foundry superintendent, Mr. Soss. He got me very much interested in the foundry sand problems, and I had more molding and core-making experience—

(Testimony of Harry W. Dietert.)

that was only for three months. Then I entered the graduate school of the University of Illinois. That was the fall of 1922. That spring, in 1923, I received the degree of Master of Science of the University of Illinois. During the school year, while I was at the University of Illinois, I had the opportunity to do my research work in foundry sands under the direction of the technical secretary of the American Foundry Association. August 1, 1923, I entered the employment of the United States Radiator Corporation as a plant engineer of the Detroit plant. My duties as plant engineer at Detroit were to install the new equipment that they had bought for the foundry, see that it was maintained, and also the iron mixtures, sand mixtures, and anything the foundry superintendent wanted done. In 1927 I was appointed the chief research engineer of the United States Radiator Corporation for all of their seven foundries. I visited them all, regularly. I had control of their sand; all the materials bought for those plants had to be accepted by me, and then the purchasing department would buy the materials. I also instituted a sand control system. By that I mean a system whereby the foundry would measure the moisture content of the sand, the openness or permeability, the green strength, that is, the bond it possessed, and the dry bond it possessed, the strength of the cores, and fineness, and clay content of the sand. We studied our sand very carefully, and our oils that were used for cores, and we were responsible to the general office

(Testimony of Harry W. Dietert.)

for producing a good foundry loss. I think the United States Radiator Corporation have [407] a record of exceedingly good foundry practice. In 1933 I was promoted to the chief engineer of all the plants. I had charge of the pattern construction, all the core equipment, all the equipment bought for all the foundries; still retained control of the materials for their foundries, designed the equipment, such as boilers, radiators, and what-not, so that it would be designed right for the foundry—wouldn't have these patterns coming in here looking like somebody else should mold them and not your own foundry. In 1936 my other duties with my company were getting rather heavy, and I took the position with the United States Radiator Corporation as consulting engineer. That meant I would have more time for my company. I still serve that company in that capacity.

Q. During the period of time that you were chief engineer for the United States Radiator Corporation, who, if anyone, was responsible for the loss of cores, or the loss of castings?

A. I was held responsible to the manager of all plants and the vice-president of production, Mr. McIntyre.

Q. Are you a consulting engineer for any other company than the United States Radiator Corporation?

A. Yes, I am.

Q. What company or companies?

A. Well, I am retained by the J. S. McCormick Company of Pittsburgh, Pennsylvania, continually.

(Testimony of Harry W. Dietert.)

Then I do work for numerous other companies, like Key Company in East St. Louis. It is a steel foundry.

Q. You will have to spell those names, I am afraid, Mr. Dietert.

A. Key, K-e-y Company, in East St. Louis, and the other company was J. F. McCormick.

Q. You said the Key Company was a steel foundry?

A. Yes, it was a steel foundry. We worked for the Kelsey Wheel Company of Detroit. At the present time they are working on bombs. [408] Electric Steel of Canada, the same kind of a casting.

Q. Electric Steel Company of Canada?

A. Electric Steel Company of Canada, Three Rivers, Quebec.

Q. Do the Kelsey-Hayes Wheel Company of Detroit and the Electric Steel Company of Canada operate and maintain foundries?

A. Oh, yes, they do—large ones.

Q. I do not know whether you detailed generally your duties when you first went to work with Westinghouse as an apprentice, but with special attention to foundry work and core-making, can you tell us in a few words—

The Court: Spent 14 months after college in Westinghouse.

The Witness: Yes.

Mr. Aurich: My point was whether he made cores there, or what he did.

(Testimony of Harry W. Dietert.)

The Court: He said he made cores and foundry work, both.

The Witness: Yes.

Mr. Aurich: Thank you, your Honor.

Q. Now, you have spoken about the U. S. Radiator Corporation. Do they operate foundries?

A. Yes, they do. They operate a group of foundries.

Q. How many, please?

A. At the time that I was with them continually—that is, every day—we operated seven foundries; we had a total of eight plants, seven foundries, though, only.

Q. Can you tell us generally the daily output of each of those foundries?

A. Oh, yes. The Detroit, the Dunkirk, and Corry plants had a capacity of 100 tons each. Sometimes they got as high as 120 tons out of them. Whereas the Detroit and West Newton plant would have a normal output of around 50 tons. The Geneva Foundry generally put out 30 to 35 tons, and the Bristol, Pennsylvania, [409] plant, where we made steel boilers, we had an output of—well, it would get near 20 tons a day.

Q. How do those foundries that you have referred to, that were operated by the United States Radiator Corporation, rate in so far as their size is concerned?

A. Well, the three large ones, Detroit, Dunkirk and Corry, would be rated as large foundries.

(Testimony of Harry W. Dietert.)

The Court: Q. How many core-makers do they employ?

A. Core-makers, we would have, as a rule—let's say Dunkirk and Corry—those were the two radiator foundries—we have around 40 core-makers, whereas at the Detroit plant, where we used mechanical equipment and the cores are larger, we would have around 15 to 20 core-makers.

The Court: We are interested in core-making.

Mr. Aurich: Yes, your Honor.

The Court: Proceed.

Mr. Aurich: Q. In the United States Radiator Corporation, during the time that you were familiar with their operations, what is the percentage of loss in cores that was permitted there?

A. We asked the core room to deliver to the foundry cores with a loss not to exceed one and one-half percent, and we would run along sometimes only half of one percent loss.

Q. And what was the percentage of loss in castings that was permitted by the United States Radiator Corporation, in so far as you know, while you were connected with it?

Mr. Hackley: I object to that as irrelevant and immaterial, what is permitted; I think if it has any materiality, it is what actually happened, your Honor.

Mr. Aurich: Well, I will ask him what actually happened.

A. The Detroit plant, for example, one year we set what we believed was an awful good record for

(Testimony of Harry W. Dietert.)

a water-tested casting. In other [410] words, the hydraulic-tested casting must hold water at 80 to 90 pounds per square inch, no welding allowed. We put through castings that year with a loss of three percent.

In the radiator foundry it is a little more difficult. The radiator metal line is getting very thin. We would run foundries at five percent. That is when we would say, "Boys, you are doing a good job." And I could safely stay in the office and do what I wanted to. But when the loss would get around six percent or seven percent, I have had to get out there and show them how to get that loss down so the foundry superintendent could produce results. [411]

Q. Have you ever testified as an expert in any litigation before you testified here today?

A. No, I have not.

Mr. Hackley: Are you calling him as an expert here, Mr. Aurich?

Q. Are you a member of any technical society and, if so, which ones?

A. Yes. I am a member of the American Foundry Association, the American Society of Metals, the American Society of Testing Materials, and the American Optical Society.

Q. Have you done any work or participated in the doing of any act of work for the American Foundry Association?

A. Yes, I had the pleasure of serving on a

(Testimony of Harry W. Dietert.)

number of committees and as chairman each year since 1923.

Q. Are you the author of any publications dealing with foundry practice, and, if so, can you name just a few of them, please?

A. Yes. I have a book on the press now. The American Foundry Association are publishing it. It is a large volume dealing with the complete story of core practice. I have written an innumerable number of reprints for the various technical societies on foundry practice. And I just recently published a book for the Great Lakes Foundry called "Foundry Sand Control," and others.

Q. Are you generally familiar with the foundry practice that is employed in the various foundries in the United States?

A. Yes, I consider myself very familiar with the American foundry practice.

Q. Generally speaking, will you name a few of the foundries with whose practice you are familiar?

A. The American Radiator Corporation, American Radiator, General Electric—all of their plants.

The Court: Q. Have you ever been in a General Electric [412] plant foundry?

A. General Electric?

Q. Yes.

A. Which foundry, your Honor?

Q. Schenectady.

A. Yes, I have been there.

Q. When were you there?

(Testimony of Harry W. Dietert.)

A. At the time when I bought——

Q. What year?

A. I will connect it up with the Pyrometer. I would say that was around 1938—running through the patent department.

Mr. Aurich: Q. 1938? A. About 1938.

Q. Can you continue to name any other foundries?

A. The foundries of Westinghouse Electric, Buffalo Machine—all American Steel foundries.

The Court: For the purpose of this case, while I do not want to guide you or to suggest to you, but I have in mind conserving time, I suggest since the only issue here is cores and their use or abuse, that you confine yourself to that phase of the case.

Mr. Aurich: Yes, your Honor. In that connection, your Honor, some remark you made during the plaintiffs' case has somewhat perplexed me in regard to the defenses that I had prepared, and if I might take the time of the Court and have your Honor's indulgence for just a moment, I might explain my position.

The Court: The only thing you need to concern yourself about is the record here in the event that when I dispose of this case it goes elsewhere. That is all you need to concern yourself about.

Mr. Aurich: Your Honor indicated this afternoon you did not want to hear any testimony about any electric ovens—or, rather, you did not want to hear any testimony, if I remember correctly,

(Testimony of Harry W. Dietert.)

concerning the making of cores with Mr. Ruddle's
[413] Core-Min-Oil in anything——

The Court: No, I did not say that. I did not say that.

Mr. Aurich: Q. Are you familiar, Mr. Dietert, with the type of ovens that are used in the majority of the foundries that are in use in the United States?

A. Yes, I have worked with them; very familiar with them—Eastern foundries——

Q. Pardon me?

A. Eastern, Midwestern foundries—I am very familiar with them.

Q. Will you state what type of ovens are used in a majority of those foundries with respect to whether they are indirect or direct-fired ovens?

A. Direct-fired.

Mr. Hackley: I object to the question as calling for a conclusion of the witness, for which no proper foundation has been laid.

The Court: It is sufficient foundation for all purposes of this case. Read the question, Mr. Reporter.

(Question read.)

Mr. Aurich: Q. What is the percentage of foundries in the United States that are using direct-fired ovens as compared to the number of foundries using indirect-fired ovens?

Mr. Hackley: I object to the question on the grounds that no proper foundation has been laid.

(Testimony of Harry W. Dietert.)

The Court: Answer it. The objection is overruled.

A. I estimate around 20,000 core ovens in use in America, and you would have a hard time naming twelve electric core ovens, and those twelve are using or are interested in electricity—well, let us give it one or two per cent. I don't know exactly. It wouldn't be many.

Mr. Aurich: Q. Do you know of any other type of indirect-fired ovens other than the electric oven?

A. In the foundry I haven't seen any other than the electric. [414]

Q. In your opinion is an electric oven efficient for all practical purposes for coremaking as a direct-fired gas oven?

A. I had some experience with an electric-heated oven at the Fremont Foundry, Fremont, Ohio. I was called in there on account of the cores were not baking right. It was an oil bonded core, and a good oil, too. And we found that they had neglected to ventilate the oven. Got the oven ventilated, and the fellow was making pretty good cores. But then it was too expensive to operate. Now it is oil-fired.

There are one or two others that had indirect and went to the direct. There is Dow Chemicals, French Hecht—I guess you could think of others that went along, but they aren't satisfactory. Too expensive to operate.

Mr. Hackley: I move to strike the answer, if

(Testimony of Harry W. Dietert.)

your Honor please, on the ground there has been no foundation laid for the testimony, conclusion, speculation, and not responsive to the question.

The Court: The objection is overruled.

Mr. Aurich: Q. Will you name some of the commercial core oils which are now on the market and with which you are familiar?

A. I will name Linoil, Smith, Kellogg, Quandt, Swan and Fish make a whole series, Aristo——

Q. Could I hear that one again, please?

A. Aristo, A-r-i-s-t-o. Houghton make a series.

Q. Well, that is enough for my purposes. There are others? A. Yes.

Q. You are familiar with them?

A. And I have used them.

Q. Which of those you have named do you consider the best core oil for all practical commercial purposes?

Mr. Hackley: I object to the question on the ground that [415] no proper foundation has been laid.

The Court: Overruled.

A. I like the linseed oil, base oil, best, and I choose Linoil.

Mr. Aurich: Q. And what is Linoil?

A. Linoil generally tests around 62 per cent of linseed oil, and it has gum resin in it which has been treated with lime and then kerosene in it, a light kerosene generally used.

Q. What type of linseed oil do they use, boiled or raw?

(Testimony of Harry W. Dietert.)

A. When they buy it, they buy it raw, they boil it, the linseed oil, the resin, the gum resin together, and add the kerosene, so it doesn't settle out. [416]

Q. Is the type of core oil that is used in the making of cores a matter that is considered of some importance in foundry practice, or is it an unimportant matter?

Mr. Hackley: I object to that as speculative, your Honor. There is no foundation——

The Court: Read the question, Mr. Reporter.

(Question read.)

The Court: You may answer.

A. It is very important.

Mr. Aurich: Q. And why is that, Mr. Dietert?

A. Because so much depends upon getting good cores with a minimum amount of trouble.

Q. Do you know in all your experience in the foundry art and especially relating to coremaking, of any successful core oil containing sodium silicate as one of its ingredients that has ever been commercially manufactured and sold?

Mr. Hackley: I object to that as incompetent, irrelevant and immaterial to any issue in this case.

The Court: Objection overruled. He may answer.

A. I know of no successful core oil that uses sodium silicate as the base.

Mr. Aurich: Q. Do you know of your own knowledge whether foundry men in the past have attempted to use or experiment with core oil which

(Testimony of Harry W. Dietert.)

contained sodium silicate as one of its ingredients?

Mr. Hackley: Same objection.

The Court: Overruled.

A. Yes, I do know of cases. I have tried that myself, when I first went with Radiator.

Mr. Aurich: Q. What do you mean when you first went with [417] Radiator? When you first went with the U. S. Radiator Corporation?

A. Yes.

Q. That was in 1923?

A. That was in the fall of 1923.

Q. What were the results of your attempts to use core oil containing sodium silicate?

Mr. Hackley: I object to that as incompetent, irrelevant and immaterial. We have here no question——

The Court: The Court is prepared to rule. The objection is overruled.

A. They were unsuccessful.

Mr. Aurich: Q. Do you know any reason why core oils containing sodium silicate as one of their ingredients were unsuccessful?

A. Well, we concluded—I did—under my direction, actually tried myself—that sodium silicate was inherently unsuited as a core binder, the difficulty in baking, moisture absorption, which gives you a strength loss when the core was stored or in storage, or when it was placed in the mold and you didn't pour the mold right away you absorbed a lot of moisture on the surface of the core——

(Testimony of Harry W. Dietert.)

Q. I think that is enough. There are other reasons? A. There are.

Q. That will be sufficient for this time. Have you recently used a core oil containing sodium silicate as one of its ingredients in the preparation of cores for foundry uses? A. Yes, I have.

Q. When did you commence such work?

A. The actual work began [418] October 25, 1941.

Q. And where was this work done by you?

A. The work was carried out at the United States Radiator Corporation Foundry in Detroit, in the Acme factory in Detroit, and at my own laboratory in Detroit.

Q. Now, without going into detail, will you tell us just generally what you did in your work with this core oil that contained sodium silicate as one of its ingredients?

Mr. Hackley: If your Honor please, I object on the ground that it purports to cover ex parte taxes, and we had here this morning the objection from our opponents here on that very same score as to tests which were performed by us—examples of those tests which were brought in——

The Court: You got it in the record.

Mr. Hackley: Subject to a motion to strike. May this be admitted with the same understanding?

The Court: This will be admitted the same way.

(Testimony of Harry W. Dietert.)

Mr. Aurich: Q. The question was just what generally did you do in that work, without too much detail, Mr. Dietert?

A. I used production core boxes and regular foundry practice, and made cores, observed results, then I would take the material and mix it in the laboratory and thoroughly test it for all known physical properties that a core should possess in accordance with AFA test procedure, and other tests that are in use.

Q. What type of oven did you use in making these cores at your laboratory?

A. I used an AFA test baking oven, which is heated by electricity.

Q. What type of oven did you use at the U. S. Radiator Corporation?

A. They are coke-fired, and of the Holcroft type. [419]

Q. Will you spell that, please?

A. H-o-l-c-r-o-f-t. The firebox is independent from the core baking ovens—a whole array of them. It is well ventilated with blowers.

Q. Is the Holcroft type of oven a standard oven used in core baking?

A. Yes, I find a lot of them in the foundries as I go around, and it is considered by many foundries as being the best.

Mr. Hackley: I object to that and ask the last part of the answer be stricken as mere hearsay, "it is considered," and so forth.

The Witness: May I have an opportunity to

(Testimony of Harry W. Dietert.)

answer it differently? My own experience has shown me it is a good oven. I have used them since 1923.

The Court: Proceed.

Mr. Aurich: Q. Generally, what type of equipment, if any, did you use for testing purposes? Just name a few of the pieces of equipment.

A. I used a moisture teller, permeability meter, the Universal sand strength machine, core hardness tester, AFA test oven, Sinter meter and others like it, dilatometer, which is a big furnace to test cores at pouring temperature of molten metals.

Q. Will you tell us what ingredients were contained in this core oil with which you worked in your laboratory and at the two foundries mentioned by you, other than sodium silicate?

A. Asphalt.

Q. What type of asphalt was it, emulsion or otherwise?

A. It was an emulsion, Y-104, premixed Colas. That was the tag on the can.

Q. What else did you use?

A. I used sodium silicate, 40 Baume, from Philadelphia quartz, and I used in these series [420] tests and foundry work a Michigan Lake sand which is used in that district, throughout the Midwest. It is one of the most popular sands that we have.

Q. Were there any other ingredients in this core oil other than the Y-104 asphalt emulsion and the sodium silicate? A. Yes, sir.

(Testimony of Harry W. Dietert.)

Mr. Aurich: Q. Where did you get the asphalt emulsion which you used in that work with this particular core oil? A. Shell Oil Company.

Q. Can you tell me how you mixed the sodium silicate solution mentioned by you, if you did mix it? A. Yes, I can give you the procedure.

Q. Will you tell us, please.

A. I had three different formulas. One is the formula we call the 24 Baume solution, in which we added one ounce of aluminum sulphate to one-eighth gallon of water, and we added one ounce of sodium fluo-silicate to seven-eighths gallon of water. We combined these two and immediately added one gallon of sodium silicate. The other one, we added four ounces of aluminum sulphate to a half gallon of water, and then we took another half a gallon of water and added four ounces of sodium fluo-silicate. We combined these two to make a gallon of material and then added three gallons of sodium silicate. The other one is quite similar. We took a gallon of water and added an ounce of aluminum sulphate and an ounce of sodium fluo-silicate. To that was added two gallons of sodium silicate. That we called a 30 Baume material. The other one was a 32 that I have just previously mentioned.

Q. The one-to-three was that Baume?

A. 32. [421]

Q. And the one-to-two was what?

A. 30 Baume.

Mr. Aurich: For your Honor's information, so that you may perhaps follow the continuity of this

(Testimony of Harry W. Dietert.)

testimony, that has not all come in, we will establish subsequently that those are the formulas given by Mr. Ruddie to the Shell Company.

Q. For our purposes, Mr. Dietert, and for the purposes of your testimony, let's call the first solution mentioned by you Ruddie's solution No. 1, which I understand was a ratio of one gallon of water to one gallon of sodium silicate.

A. Correct.

Q. And the one where you used one gallon of water to two gallons of sodium silicate we will call the Ruddie's solution No. 2. A. O. K.

Q. And the one where you used one gallon of water to three gallons of sodium silicate we will call the Ruddie's solution No. 3.

Q. Following the mixing of the solution, do I understand you made some cores with them?

A. I made quite a number of cores.

The Court: Q. Tell us what you did.

A. All right, sir. The first thing I did was to go in my laboratory and I made up test cores, a complete series of all the known tests that we have today, and determined how the core behaved at room and elevated temperatures. That gave me an idea of what I should do with this particular new oil to make it work in a foundry, what to watch out for, and I took these solutions over to the United States Radiator Foundry and I made some test cores there. I made cores from regular production core boxes, like boiler sections—A-size, that is; I

(Testimony of Harry W. Dietert.)

made water-bottle cores and block cores for flasks. I mixed the sand in the regular paddle type of mixer at the Radiator, and worked with [422] the right—what we thought was the right procedure and should give us good cores—tried our best—and every core that came out of the Holcroft oven was not satisfactory to set in the mold. The small prints of the water-bottle were too weak and the outside of the core was a little bit fuzzy from the CO₂ and the sulphate gas in the core oven. I didn't have any success at the Radiator Foundry, but I did discover right away they wouldn't bake so well. I wasn't through—I was expecting something big real fast. I didn't find that to be the case. I had a lot of trouble in baking through chunk cores. Sometimes it would and sometimes it wouldn't. We decided—with my helper, Mr. Shuch, who helped me with the work, that we would shift our scene of operation to the Acme Foundry to see whether we couldn't get something there which would fit in. The final result was that the way I could make a good casting regularly was to bake the cores in my own laboratory with an electric oven, take the cores over to the foundry—and I brought them over the same day or either kept the cores in a dry place.

Q. Now, in making your cores with these solutions and asphalt emulsion, what was the ratio or what were the percentages of the various ingredients that you used?

A. All right, sir. I can name those. For the

(Testimony of Harry W. Dietert.)

24 Baume I used 1750 cc's of dried sand and 125 cc's of the 24 degree solution and 40 cc's of the asphalt emulsion. That was one formula.

Q. All right. Did you use other formulas, and if so, give them to us briefly, please.

A. Yes, I did. Another formula that I used was 1750 cc's of dried sand and 80 cc's of solution 32 Baume, and 50 cc's of asphalt emulsion. And the other solution was exactly the same only we used 30 degrees Baume. [423]

Q. Now, you have referred to a solution consisting of 1750 cc's of dried sand, 125 cc's of the solution and 40 cc's of asphalt emulsion. Did you add any water to that solution?

A. Yes, I did; I added some water to that.

Q. How much water did you add?

A. I added 90 cc's of water.

Q. Where did you get that formula, or anything approximating it?

Mr. Hackley: Mr. Aurich, do I understand he added the water to each formula?

Mr. Aurich: I don't think so.

Mr. Hackley: Which one did he add it to?

The Witness: That was for the 24-degree one. This particular type of sand required water to temper it, so I got a mold and made it in a core box.

Mr. Aurich: Q. Where did you get the formula that approximatd the one you have just referred to? A. It was in the patent.

Q. I show you the patent which is Plaintiffs' Exhibit 1, one of the Ruddie patents in suit, and call

(Testimony of Harry W. Dietert.)

your attention to the formula appearing on the second page, and ask you if that approximates the formula that you had reference to. A. It does.

Q. The difference being that in the patent it calls for 65 cc's of water, and you used 90?

A. That is right.

Q. Now, taking all three of these core oils with which you worked, the Ruddle No. 1 and the Ruddle No. 2 and Ruddle No. 3, will you state generally how the results of all three compared one with the other?

A. The result of the No. 1, 24-degree, was a little more consistent—I wouldn't have to be so fussy about the water addition to the No. 1 as I did to No. 2 and 3. [424]

Q. I am speaking principally, Mr. Dietert, with respect to the results obtained.

A. Well, in my mind none of them were practical. I can't pass them.

Q. As respects each one, were they comparable one to each other within practical limits?

A. Oh, yes, I would group them all together and put them in one class.

Q. Now, I want to get into the record, if we can, a list of the essential characteristics of a core oil, as you have found them from your experience. In asking you these questions I will endeavor to break up the continuity, taking the periods of time. First, in the period commencing with the time the core oil is mixed with the sand and continuing up

(Testimony of Harry W. Dietert.)

to the time that the core is actually made, what core oil attributes and qualities are essential and considered necessary in core oils?

A. I would want the core oil to be in a concentrated form. The core oil should not settle out in storage. The core oil should be easy to handle and should be ready to use, and it should adapt itself to be used with dried or run-of-the-mine sand, which may be damp, wet.

Q. Have you completed your list?

A. How far did you take it, up to mixing?

Q. Up to the time the core is made.

A. O.K.

Q. I can't tell when you have finished your answer.

A. It has to be easy to mix, should require the minimum amount of cleaning of a mixing equipment. I would want core oil so it would not air-dry in the mixed sand too fast, and the core oil shouldn't settle to the bottom of the pile of the mixed sand——

Q. What was that last, please?

A. The core oil shouldn't drain or settle to the bottom of the stored pile. I am about [425] ready to make my core now. I guess I stop.

Q. What do you mean by your statement that core oil should be in a concentrated form, and in doing that, if you can tell us just briefly what you mean and why it is essential to have it, in just a few words, I think it would be helpful.

(Testimony of Harry W. Dietert.)

A. Just to avoid buying—paying freight and storing a large bulk of core oil, and so that we would not have—what a lot of our foundries have—we do now—numerous tanks where we store all our oils. Tanks are expensive, and we would like to have it in concentrated form so we would not have to buy so much of it and pay freight on so much of it and pay for handling so much of it.

Q. As a result of your experience in foundry practice, and with coremaking in particular, and as the result of your working with and experimenting with Ruddle solutions, have you any opinion as to the comparison of concentration of let us say Linoil as compared to Core-Min-Oil? A. Yes.

Q. Do you have an understanding of the words “Core-Min-Oil”? A. Yes, I have.

Q. What is that?

A. By “Core-Min-Oil” I understand a core oil that is composed of sodium silicate with these two chemicals and asphalt emulsion, used in those percentages that I have related just a few moments ago.

Q. With that understanding, will you tell me how Linoil and Core-Min-Oil compare in so far as being in concentrated form is concerned?

A. All right. I would say they would not [426] compare.

Q. You would say they would not compare?

A. They don't compare alike; they are quite different. With Linoil—there are certain cores I have in mind now—I would use a ratio of one quart of

(Testimony of Harry W. Dietert.)

oil to fifty parts of sand. If I would make that out of Core-Min-Oil I would use a ratio of one part of Core-Min-Oil to about ten parts of sand. I would end up about equal strength, and I would have to use with the Core-Min-Oil a lot of precautions to get equal strength.

Q. How about settling in storage, Mr. Dietert? What do you mean by that?

A. That is something that we experience with core oil. We look at it and we are very suspicious always that the core oil has settled, and it is an old fear that we have. We do not want the oil to settle away from the gum resin or the oil—linseed oil to settle away from the gum resin or whatever you may have. We want the materials to be the same consistency throughout, in the big storage tank or in the work.

Q. How do Linoil and Core-Min-Oil compare in that respect?

A. I would put them on an equal basis. I did not experience any settling, necessarily, with the two materials. There was some precipitate in the solution, but that was very small and we could pass it by.

Q. In making that comparison between Core-Min-Oil and Linoil, in what form was the Core-Min-Oil, one package or two packages?

A. It was in two packages, one package solution and another package of asphalt emulsion.

Q. Incidentally, just briefly, did you ever make any attempt to mix this Ruddle solution, either 1,

(Testimony of Harry W. Dietert.)

2 or 3, with the asphalt emulsion and make a ready-to-use core oil out of it?

A. Yes, I did. I did it—I found it would settle out very [427] fast. It might interest the Court to know why I did it. I thought, Well, I had better find out whether or not this material behaves the same if you make ready-to-use package or whether you use two separate packages on it. It behaved just the same.

Q. Were you successful or unsuccessful in this making ready-to-use core oil with those two ingredients that I have referred to, that is, the Ruddle solution and asphalt emulsion?

A. I couldn't make a stable solution out of them. I didn't work on it for years, but the two materials are so dissimilar that it would be a very difficult problem to find a real solution, particularly if you are going to store this material in a cold storage room where it is cold—and when these oils get cold they sure will separate.

Q. You spoke about easy handling. What do you mean when you say a core oil should be easy to handle, and why do you want it easy to handle?

A. By easy handling I mean an oil that is not too viscous—I don't want to gum up everything; I don't want to gum up the pumps that we pump oil with, and the pipe fittings where they pipe up the tanks to the tank car—we don't want that to dry around too hard, and we don't want our spigots

(Testimony of Harry W. Dietert.)

or our screwcaps to be cemented on too tight, want them to work nice.

The Court: I was hoping we would get through with this witness, that is the reason I have gone so late.

Mr. Aurich: I am sorry, your Honor, but I had planned to take this witness over this list of attributes of the core oil so that we would have a standard by which we could measure Core-Min-Oil, and there are some sixteen or twenty of them, so I don't think it is quite possible to finish tonight.

[428]

The Court: I will state to both sides in this case that starting this week—I hoped we might conclude this matter last week—it is my hope that it will be concluded here as expeditiously as possible. With that admonition we will proceed now, gentlemen.

HARRY W. DIETERT,

Resumed.

Direct Examination

(Continued)

Mr. Aurich: Q. At the adjournment of court, Mr. Dietert, and at the suggestion of the Court, did you make an inspection of any foundries in the Bay area and in Los Angeles to determine the type of ovens that were in use? A. Yes, I did.

Q. You visited the Yuba Foundry at Benicia that was mentioned by Mr. Hackley?

(Testimony of Harry W. Dietert.)

A. Yes, I did.

Q. Will you tell the Court about that, please, just briefly, as to the type of furnace and the size of the foundry.

A. At the Yuba Foundry they use one medium size Young electric oven, and this oven is substantially 7 foot by 7 foot by 9. And then the small one they have is substantially 36 inches wide and it is a four-drawer affair, and it stands about four foot high. It is not more than three foot in depth.

They have one coremaker at this foundry, and they take off a heat once a week. The heat is very small, being two to three tons a week, that is, that one heat is between two to three tons.

Q. You also visited the Warman Steel Foundry in Los Angeles, did you?

A. Yes, I was at the Warman Steel Foundry [429] yesterday.

Q. What did you find there with respect to electric ovens for coremaking purposes?

A. At Warman I found that they used one very small electric furnace. This electric furnace is a four-drawer affair, and the drawers are 32 inches wide and 54 inches in length. The whole oven would not exceed more than about 50 inches in height.

Q. Did they have any other ovens at the Warman Steel Foundry other than this one electric oven to which you have referred?

A. Oh, yes, they have two large gas ovens and then two medium sized gas ovens, in which they bake the majority of their cores. In the electric

(Testimony of Harry W. Dietert.)

oven they only bake the real small cores, and it is more of a laboratory size, as I see it.

Q. Did you visit any other foundries in the Los Angeles area to determine the type of ovens that were there in use?

A. Yesterday I visited eleven foundries in the Los Angeles area.

Q. Will you tell me how many of those foundries used electric ovens?

A. One, in addition to Warman, and that is Alloy Steel & Metal Company in Los Angeles.

Q. Now, you have mentioned something about a core oil being ready to use. Will you just explain briefly why it is necessary or desirable to have a ready-to-use core oil, and also how Core-Min-Oil compares with Linoil in that respect.

A. By a ready-to-use core oil I refer to an oil that is in a single package and is ready to use when it is delivered to the foundry and no other liquid ingredients to be added. With a single package of ready-to-use oil, you only have to purchase one material, which reduces the supervision of producing and storing. Further, with the single oil, oil in large plants, you do not have to duplicate the underground storage tanks or [430] the pumping equipment, piping, and metering system.

The single-package oil has other advantages, such as the fact that the operator at the mixer has only one ingredient to measure out, which reduces to some extent the time that is required for measuring the ingredients, which allows him to do other duties

(Testimony of Harry W. Dietert.)

while the mixer is running. You also have the advantage in single-package oil that you have only this one ingredient to measure out, which reduces the chance of error.

Q. How does Core-Min-Oil compare to Linoil with respect to being ready to use?

A. There is no comparison in that Linoil is vastly superior in this respect; that with Linoil you have one oil that is ready to use, whereas with Core-Min-Oil, I found it necessary to use it as two ingredients.

Q. Mixed just before using?

A. Mixed just before using or, preferably, really added separately into the mixer.

Q. You said something about the fact that it is desirable to have a core oil that could be usable with dried sand or with run-of-the-mine damp sand. Will you explain briefly why it is necessary for a core oil to have that characteristic, and briefly compare Core-Min-Oil with Linoil in that respect.

A. Well, in this respect the two oils are quite different, in that if you would use Core-Min-Oil with run-of-the-mine sand, you would obtain a mix that would be wet and unsuitable to use, since Core-Min-Oil contains almost enough water to temper the core mix by itself, whereas with Linoil you could use it with run-of-the-mine sand or with dry sand, which makes a much more flexible foundry operating condition.

You can use Linoil with all the types of sand that you can use Core-Min-Oil with, and when you use

(Testimony of Harry W. Dietert.)

Core-Min-Oil you cannot use that oil with all the types of sand that Linoil will work [431] with.

Q. Does it make much difference in the practical operation of a foundry whether you have an oil that can only be used with the dried sand?

A. Yes, it does.

Q. What difference does that make?

A. If you have an oil that you can only use with dried—with a dry sand, you have to go to the trouble of buying or drying the sand.

Q. Is dried sand more or less expensive than run-of-the-mine damp sand?

A. Dried sand is more expensive than the run-of-the-mine sand. For example, let us cite the Michigan, Illinois, Ohio foundry areas. There we can buy Michigan Lake sand, which is run-of-mine, for half the price that we can buy the dry sand.

Q. How is the sand stored in the U. S. Radiator Corporation today?

A. At the U. S. Radiator Corporation plant the core sand is stored under a large yard crane, stored outside subject to the atmospheric conditions. They have this because the amount of core sand that is stored is so large—at times they will have as many as fifty cars of sand in them.

Q. And I understand subject to atmospheric changes in the weather?

A. Yes, it is.

Q. You mentioned something about the fact that core oil should be easy to mix with the sand. Will

(Testimony of Harry W. Dietert.)

you tell us briefly why a core oil should have that characteristic, and compare Core-Min-Oil with Linoil in that respect, please.

A. I prefer a core oil that is easy to mix so as to save time of mixing, and have an oil at the plant that will mix with the sand where you use a paddle or muller or a kneading type of sand mixer. If the oil is difficult to mix with the sand, then the time of mixing is increased, which is expensive. And another thing, [432] you might be compelled to use the more expensive form of mixing equipment, such as the muller or the kneading machine, if the oil is difficult to mix.

My work with these two oils showed definitely that with the Core-Min-Oil, to get a good mix, particularly to get the asphalt to cover the sand grains thoroughly, it was necessary to use a muller type or kneading type of mixing equipment, whereas with the Linoil you could use the conventional type of paddle mixer or you could use this more intensive form of mixing if such were available.

Q. You also mentioned something about a minimum amount of cleaning of equipment. Will you describe what you mean by that for us, generally, and likewise compare Core-Min-Oil with Linoil so far as that characteristic is concerned.

A. By cleaning of the equipment I refer particularly to the mixer. If the oil air-dries fast, and you interrupt the operation of the sand mixer, the sand would dry in the corner of the mixer, which really compels you to clean the mixer when you interrupt

(Testimony of Harry W. Dietert.)

the operation; whereas if the oil dries slowly, you can interrupt the mixing operation and only dry your sand mixer once a day.

I found that when I mixed Core-Min-Oil in a sand mixer, it is necessary to clean the sand mixer within five minutes after the sand was dumped, or else the sand would tend to build up in the corners of the mixer. When I used Linoil I could clean the mixer at any time during the day.

Q. In that respect which do you think is the superior oil, Linoil or Core-Min-Oil?

A. Linoil is much superior in that respect.

Q. Now, you have also mentioned something about the core oil [433] settling to the bottom of the stored pile of sand. Do you consider a core oil that settles to the bottom of the sand to be a good core oil or a bad core oil?

A. I consider the core oil that settles, that drains to the bottom of the pile of stored sand or bin or bench or on the floor, is a bad core oil.

Q. Why is this settling of the stored sand, as you described, a disadvantage?

A. When the oil bond settles, it drains to the bottom of the pile or bin, and that causes the top of the sandpile to contain an insufficient amount of oil binder, whereas the bottom of the sandpile would contain an excess amount of oil binder. The cores made from the top of the sandpile would be too weak, while the cores made from the bottom of the pile would be too strong. This variation in strength certainly would cause an increase in scrap.

(Testimony of Harry W. Dietert.)

Q. Have you any opinion as to the merits of Core-Min-Oil and Linoil with respect to the drainage that you have referred to?

A. Yes, I have very definite opinions which I formulated from actual test. In this test I made up two batches of sand; one was bonded with Core-Min-Oil and the other was bonded with Linoil. I placed both of these sands in separate airtight containers and stored them for five hours. After the five-hour storage period, I made cores from the top, the center and the bottom of the container, baked them, allowed them to cool, and then determined the tensile strength.

Mr. Hackley: If your Honor please, the witness is testifying from notes. I object to notes unless they are identified.

Mr. Aurich: I will identify them for you.

Q. What notes have you in front of you, Mr. Dietert?

A. I have here notes of the work that I did with Linoil and [434] Core-Min-Oil cores. They are my daily reports. I recorded operations, observations and test results, and also summarized my work on sheets.

Q. If I understand you correctly, you kept daily records of all work done by you, and then subsequently had them typed and placed into the form in which they now appear in your book?

A. Yes, I did.

Mr. Aurich: Do you wish to inspect the book, Mr. Hackley?

(Testimony of Harry W. Dietert.)

Mr. Hackley: I won't interrupt your direct examination, but I would like to before I cross examine.

Mr. Aurich: Q. Will you continue your answer, please, as to what you found with respect to the drainage of core oils from the sand.

A. In the case of Core-Min-Oil, the cores that were made from the top of the container were 17.9 per cent weaker than the cores made from the bottom of the pile, showing a considerable amount of drainage of the Core-Min-Oil to the bottom of the pile.

With Linoil bonded sand, the cores made from the top of the container were only $21\frac{1}{2}$ per cent weaker than the cores made from the bottom of the container.

Q. I take it from your tests, then, that you are of the opinion that Core-Min-Oil is not as satisfactory as Linoil in respect to the drainage?

A. That is true.

Q. Can you tell me some of the core oil attributes and qualities that are essential and required during the period of time while the core is being made and up to the time of baking?

A. First, the oil should not impair the flowability of the sand. Second, it should lend itself to green strength control. Third, oil should not cause excessive sticking in the core box. Fourth, the oil should not air-dry rapidly, causing the sand adhering [435] to the surface of the core box to harden.

(Testimony of Harry W. Dietert.)

Fifth, it should be clean and pleasant to handle.

Sixth, it should lend itself to booking and patching.

Q. Now, why should a core oil possess the degree of flowability that you referred to, and, generally, how does Core-Min-Oil compare to Linoil in that respect?

A. By flowability I mean the ease with which sand rams into restricted parts of a core box. In this respect the two oils do not differ greatly; they are quite similar. One thing, however, that is worthy of noting is that the moisture content of these sands must be held at a definite value. In the case of Core-Min-Oil, if the Core-Min-Oil loses any of its water, it gets sticky, and then it starts sticking in the core box. And Core-Min-Oil sand has a tendency to lose its water very fast. That is not necessarily true of Linoil sand.

Q. How does Core-Min-Oil compare with Linoil generally with respect to this disadvantage of sticking to the core box that you mentioned?

A. I did not find much difference, providing the two sands, namely, Core-Min-Oil sand and Linoil sand, were correctly tempered for nice working and ramming. However, Core-Min-Oil loses its moisture fast, as I mentioned before, and becomes sticky and causes sticking, so we have to take special precautions with Core-Min-Oil sand to keep it correctly tempered so it won't stick.

Q. What do you mean by "green strength control"? What does a coremaker want in a core by way of green strength control?

(Testimony of Harry W. Dietert.)

A. By "green strength" I refer to the green bond of the core mixture immediately after the core is removed from the core box. I find it very desirable to have a core mixture that is constant in its green strength. When we have an oil that is [436] constant in its green strength, it enables us to add definite amounts of green strength in parting material. The green strength of Core-Min-Oil sand and Linoil sand are quite similar, providing the moisture is held at the temper point.

Q. That is the same precaution that you mentioned a few moments ago that you must take when working with Core-Min-Oil?

A. That is right.

Q. Now, what happens when you have a core oil that air-dries rapidly, in so far as work with the bonded sand on the coremaker's bench is concerned?

A. When an oil causes a sand to lose its moisture rapidly, why, the sand becomes sticky on the bench and it crusts over on the corners of the bench, and where he is not using the sand continually, he has to take time to keep the sand scraped together and used up continually, which slows him up.

Then there is another disadvantage in that these fast air-drying oils will cause a sand to harden to the sides of boxes if he just sets them aside for a little while. And this hardening means he has to clean his boxes every time he stops his operation, even during lunch hour, whereas with Linoil core sand, which does not air-dry fast, and you can clean

(Testimony of Harry W. Dietert.)

your box, say, an hour or so after you have used it, you can set the box aside and start on something else and then come back to the box. You do not have to worry so much about its drying hard to the sides of the box.

Q. Do you consider that a serious disadvantage in a core oil, Mr. Dietert? A. Yes, I do.

Q. Did you make any comparative tests to determine the rate of air-drying of a core sand bonded with Core-Min-Oil and a core sand bonded with Linoil?

A. Yes, I made several tests: [437] One test I thought was particularly practical, and that is I took a pile of sand that was bonded with Core-Min-Oil and then a pile of sand which was bonded with Linoil. I came back within a hour's time, and they were stored side by side, and the pile of sand bonded with More-Min-Oil crusted over the entire surface of the pile to a depth of one-eighth of an inch, whereas in the case of the Linoil bonded sand, I found no appreciable crustation at all.

Q. What would one have to do after returning to the exposed bonded sand and finding a crust there of, say, one-eighth of an inch thick, if you wanted to use the sand?

A. He would have to take time out to remove the hard crust of sand, or it would be mixed in with the sand, and these crusts or lumps of sand would show on the surface of the core box, which would be a great disadvantage in that you would have a porous box there.

(Testimony of Harry W. Dietert.)

Q. You have also mentioned a core oil should be clean and pleasant to handle. Is that something that has been noticed more particularly in the last few years?

A. Yes, in the recent few years, foundries have been beginning to appreciate good housekeeping, and they require an oil that is clean and pleasant to handle. In addition to that, coremakers are beginning to demand that the oil be clean and pleasant to handle.

Q. How does Core-Min-Oil compare with Linoil, for example, in that respect?

A. Absolutely no comparison.

Q. Which is the cleaner of the two?

A. The Linoil is by far the cleaner of the two, and it is quite pleasant to handle. It does not air-dry quickly to your hand; it does not smart or bruise on your hand. It is a vegetable oil which is really quite good for the skin of your hand, whereas the Core-Min-Oil, that material, when you work with it and are through ramming [438] your box, and you hold your hand up to the air a fraction of a minute on a dry day, it dries on your hand; it gets sticky and the asphalt gets under your fingernails, in the pores of your skin, and I found that when I was making cores with Core-Min-Oil I always had a tendency to wash my hands quite frequently, and that is washing the oil out of your hand. I could work a half day with Linoil and it wouldn't be unpleasant at all.

(Testimony of Harry W. Dietert.)

Q. Now, you have mentioned something about ease of booking and patching. Will you explain just generally what you mean by "booking and patching," and then if you can, in a very few words, tell us how Core-Min-Oil compares with Linoil in that respect.

A. By "booking" I mean molding together two core boxes, or a core box and a drier, and removing the core box, and we like to have the sand knit nicely.

In the case of Linoil, it is easy to book, whereas the Core-Min-Oil, I have found difficulty in booking. And I believe the booking disadvantage comes in from the flash air-drying surface of the core when booked together.

In the case of patching, you can patch both the cores, but with Core-Min-Oil sand you have to patch right away, otherwise the core dries and it is not patched or slick, nice. With Linoil you do not have to be in a particular hurry. If you build up a large core from Linoil sand, you can build on, but I do not think you can do that well with Core-Min-Oil; it dries.

Q. Can you name some of the desirable characteristic qualities of a core oil required by a foundryman in proportion to the operation, say, from baking to shaking out?

A. First, the core oil should lend itself to easy baking with reference to time of baking and temperature. Second, the oil should not be sensitive to the atmosphere within the oven. Third, it should

(Testimony of Harry W. Dietert.)

[439] have sufficient warm strength. Fourth, it should not stick excessively to the drier or core blade. Fifth, it should not rapidly absorb moisture during storage. It should have a minimum gas content. Next, it should possess ample strength and at the same time possess collapsibility. And last, it should have no retained strength, that is, it should burn up or shake out easily.

Q. We will discuss those characteristics one by one, Mr. Dietert. Taking the first, easy to bake, that you mentioned, just generally what do you mean by "easy to bake," and how do cores made with Core-Min-Oil compare in that respect with cores made with Linoil?

A. By "easy to bake" I refer particularly to an oil that is not oversensitive to temperature of baking or oversensitive to time in which it was baked. Certain oils you can bake heavy and light sections with quite a range in the same oven. These same oils generally allow you to bake heavy sections that will pour thoroughly and yet not have the corners of the core or the thin core prints or projection overbaked. Time of baking of Core-Min-Oil cores is faster than Linoil cores, providing the section is not over, say, one inch thickness. Then he can bake a Core-Min-Oil core in a third of the time. But as you increase the size of the core, the speed of Core-Min-Oil baking is materially reduced. When you reach a section of core seven inches in thickness, I had to bake the Core-Min-Oil cores the same length of time that I had to bake the Linoil cores. The

(Testimony of Harry W. Dietert.)

Core-Min-Oil core, however, was really more difficult on seven-inch-thick cores. It would skin-dry on the outside, but it was very difficult to get to the inside. In other words, I found it was more erratic in baking than Linoil, and I have every reason to believe that if you had a core that is twelve [440] inches thick, that I could bake such a core more easily and more thoroughly out of Linoil than I could with Core-Min-Oil.

Q. How do cores made with these two core oils, namely, Core-Min-Oil and Linoil, compare with respect to consistency of baking?

A. I found that the Linoil cores were more consistent than the Core-Min-Oil cores. The edges of the Core-Min-Oil cores would overbake quite easily, and you had to watch it to get good firm edges. If you overbaked it a little bit, the edges would get soft, even if you baked them in controlled atmosphere. Whereas the Linoil core, I would bake a heavy chunk, and I would have the edges come out nice and hard, and the prints are strong. The Core-Min-Oil core gets kind of glass-hard. It is brittle hardness or strength. [441]

Q. How did the cores baked with Core-Min-Oil and Linoil compare with respect to the sensitivity of atmosphere in the furnace?

A. Absolutely no comparison here. Linoil is much superior. I can bake a Linoil core in a wide variety of atmospheres and not experience any harmful results, whereas with Core-Mine-Oil cores, any fumes from the fuel are very detrimental.

(Testimony of Harry W. Dietert.)

Q. Now, you have mentioned something about the fact that a core should have sufficient warm strength. Will you describe briefly what you mean by "warm strength," and why it is necessary that a core have that characteristic?

A. The warm strength that I refer to in my work is the strength of the core when it is at 140 degrees temperature. In other words, it is still warm. It is desirable to have a good warm strength, because in many of our foundries we rap out our cores from the drier, off the drier blade while it is still warm. In fact, many plants provide gloves to the men that rap out the cores. Now, if you did not possess good warm strength, you would experience a lot of breakage, whereas if it has sufficient warm strength, why, you would have a minimum of breakage at this point.

Q. In other words, sufficient warm strength, or warm strength generally, is something you want in a core, and not something you do not want, is that correct?

A. You want sufficient warm strength. It is a very vital factor.

Q. Did you make any test to determine the warm strength of cores made with Core-Min-Oil, and also cores made with Linoil?

A. Yes, I did.

Q. Will you give us the results of those tests, please?

A. Linoil has a warm strength of 36 pounds, whereas the 24-degree Baume Core-Min-Oil cores

(Testimony of Harry W. Dietert.)

have a warm strength that would range in the low 40-pound strength—42.6, 42.8, and so on. [442]

However, when you used Core-Min-Oil that contained a higher percentage of asphalt than the 24—I refer now to Core-Min-Oil 30-degree Baume solution, and Core-Min-Oil with the 32 Baume solution—these are fairly high asphalt—in which case the hot strength was low; for the 30 I only obtained around 22 pounds; with the 32 it came to 29, meaning that Core-Min-Oil cores made with a high asphalt content are in the upper limit as set forth; in the 30 and 32 Baume solution the warm strength is really low, now, which is quite natural to explain.

Q. Have you completed your answer?

A. I have completed it.

Q. I did not mean to interrupt you. If I understand you correctly, in the Core-Min-Oil the sodium silicate solution, or Ruddle Solution, is the thing that gives the cores strength, while the asphalt emulsion is the thing that causes core to have collapsibility; is that generally true?

A. That is the general truth.

Q. And the more asphalt you add, the lower the strength of the core?

A. That is right.

Q. Now, you have mentioned something about moisture absorption. Can you described what you mean by moisture absorption, and compare cores made with Core-Min-Oil and cores made with Linoil in that respect, and if you have any test data upon which to predicate your answer and your opinion and conclusion, will you let us have it, please?

(Testimony of Harry W. Dietert.)

A. I made three different types of determination: one is where I placed cores of Core-Min-Oil and cores made with Linoil in a mold. I would leave the cores in the mold a certain length of time, then I would take the cores out, and I would determine the strength and hardness. It was done in a foundry.

Another series of comparisons made were placing cores made [443] from these two different core oils under discussion, placing the cores in a humidor to check the moisture absorption. And I also placed the cores made from these different oils out in the room and let it set for awhile. And I like my test where I place the cores in the mold better; I think it is the real practical one.

Q. That is at the foundry?

A. It is in the foundry, and it illustrates the rate at which these cores soften. Now, when I placed a Core-Min-Oil core in a mold for $16\frac{1}{2}$ hours, I found loss of strength of $82\frac{1}{2}$ percent. In other words, they lost $82\frac{1}{2}$ percent of their original strength.

Q. What type of core was that?

A. That was a Core-Min-Oil core with 24 Baume solution. It did not make much difference whether you used a 30 or 32 Baume. The results are all up in the 80s. While with the Linoil cores placed in the mold the same length of time, in the same mold, I lost only 58 percent of the original strength.

Q. You think that is a fairly accurate way to test the moisture absorption of the core?

A. I do.

(Testimony of Harry W. Dietert.)

Q. Why did you test the moisture absorption of these cores by first placing them in molds?

A. Because that is exactly what would happen in a foundry. You would place the cores in a mold and you would not have iron right away to pour in them at the foundry. So the cores would have to remain strong so it would not bend between the chaplet supports, and so the core surface at the chaplet supports would not get soft. If it became soft in the mold, you would lose a metal thickness. It would raise up core-raises and other casting defects.

Q. Then, in your opinion, I take it, Linoil is far superior to Core-Min-Oil with respect to moisture absorption?

A. Yes, Linoil is vastly superior to Core-Min-Oil in moisture [444] absorption, whether taken in storage, in the humidior, or in the mold.

Q. I was just going to ask you, did your tests that you formed when you used the humidior give you substantially the same results as the tests which you have described when you used the mold at the foundry?

A. Surprisingly close. For example, with Core-Min-Oil, 24 Baume, in a humidior, 88 percent; Linoil, 61 percent.

Q. Now, you have mentioned something about gas content. Will you describe whether you want a gas content in a core, or whether you do not want a gas content in a core, and briefly tell us why, and then make the comparison between cores made with Linoil and cores made with Core-Min-Oil?

(Testimony of Harry W. Dietert.)

A. In a foundry we desire a core with a minimum gas content. I find it best to actually measure the gas content of a core with measuring equipment, and in this determination we take a piece of the core and put it into a furnace at 1800 degrees Fahrenheit and burn it up completely. We measure all the gas that that core gives off in cubic centimeters of gas per gram of core.

This type of test was made on Core-Min-Oil cores and on Linoil cores. I found that the Linoil had slightly less total gas content than the Core-Min-Oil. For example, the Linoil core possessed a gas content of 12.25 cubic centimeters of gas per gram of core that was burned, whereas the Core-Min-Oil core showed a gas content of 17.25.

It may interest the Court to know that most of this gas came from the emulsion. I made up cores with just emulsion and obtained a gas content from the emulsion of $13\frac{1}{2}$ centimeters. The Ruddle Solution does not contain much gas—only four cc's. Add those together and you get $17\frac{1}{2}$ cc's of gas. That is independ- [445] ently. Now, if I take the Core-Min-Oil core itself, I get $17\frac{1}{4}$. It checks very close.

Q. When you used emulsion in your last answer, Mr. Dietert, you were referring to asphalt emulsion?

A. I was referring to the Shell Y-104 asphalt emulsion.

Q. Will you give us the figure, please, of the gas

(Testimony of Harry W. Dietert.)

content for the Linoil core? Mr. Hackley did not get that figure. A. 12.25.

Q. I want to refer again, just for a moment, to the moisture-absorption-of-oil discussion. Is the moisture absorption or strength of loss of a core made with Core-Min-Oil affected by sodium fluosilicate and aluminum sulphate additives of the Ruddle Solution?

A. The moisture absorption is not affected when you make Core-Min-Oil cores with or without sodium fluosilicate or aluminum sulphate.

Q. Now, in that connection also, in general foundry practice, how long a period of time must a baked core remain hard and useful?

A. That would vary in different foundries. Most foundries would want their cores to be useful, at least have a minimum of two days, and if you store the core for two weeks, it still should be useful, whether it is raining or whether it is dry weather.

Q. Now, you mentioned that the core should possess sufficient strength and at the same time have the required degree of collapsibility. Will you tell us what you mean by that, and how cores made with Linoil compare with cores made with Core-Min-Oil in that respect?

A. By collapsibility I mean the rate at which the core burns or disintegrates within the casting after the metal is poured. If the core collapses at too slow a rate, then we place the solidifying metal and cooling metal under strain. I know from actual experience that certain castings will heat-crack or

(Testimony of Harry W. Dietert.)

strain due to the fact that the cores did not collapse fast [446] enough. It would be interesting just to relate how we make this test in the laboratory to duplicate the foundry condition. We take a core specimen and insert it in a furnace which is at the pouring temperature of the molten metal. Our furnace will go up as high as 3,000, so you can measure it for steel, gray iron bars, aluminum, magnesium, or whatever metal you are using. These cores are put in this furnace at the temperature at which you pour the molten metal. On top of the core you place a quartz rod, which loads the core to a load of four ounces per square inch. On the upper end of this quartz rod is located a dial indicator. You measure the time with a stop watch that it takes that core to collapse under that heat. As a rule, we use 2,500 degrees Fahrenheit for gray iron work, feeling that is the temperature of the molten metal around the core. That is the afterate temperature. As soon as that core collapses, why, you see the quartz rod come down and the indicator spins around. If it collapses in a minute and a half, completely collapses in a minute and a half, then I say that oil is very fast in collapsibility; whereas if it collapses in seven or eight minutes, it is slower in collapsibility. If it goes in twelve minutes time, we say it fails to collapse. At the end of this twelve-minute period we apply a load to the core which is within this furnace at this high temperature, and actually measure the strength of the core at that temperature, that is, hot strength.

(Testimony of Harry W. Dietert.)

Now, in comparing the two cores made from Core-Min-Oil and Linoil, the Linoil core will collapse in two and a half minutes for the type of sand we use; with the same sand, but using Core-Min-Oil, the core specimen fails to collapse in the twelve-minute period of time. In other words, the Core-Min-Oil cores do not collapse readily enough for fast production work, and considerable [447] effort would be required to remove the core from the casting further.

Mr. Aurich: Q. Just prior to the recess, Mr. Dietert, we were speaking of the required degree of strength that a core must possess and still have requisite collapsibility. Will you state whether you were ever able to make a core with Core-Min-Oil that had sufficient room strength and at the same time possessed the sufficient degree of collapsibility?

A. I never was able to make a Core-Min-Oil core that possessed sufficient room strength that would collapse satisfactorily.

Q. I hand you a core and ask you to tell the Court what, if anything, you had to do with it; how it was made, and what caused it to be in the form in which it now is?

A. This originally was a Core-Min-Oil core made with 32 Baume solution. It was heated in our furnace unit, which we call a dilatometer, at 2,500 degrees Fahrenheit, for a period of 12 minutes, and it failed to collapse, as you can see.

Q. Instead of being in the form in which it now is, how should it have been?

(Testimony of Harry W. Dietert.)

A. It should have formed a little sand in the bottom of the pan of the dilatometer.

Q. In other words, it should not have been in the form of a core? A. That is right.

Mr. Aurich: I offer the core identified by the witness, for the purpose of illustrating his testimony, and ask that it be marked Defendants' Exhibit DD.

Mr. Hackley: I assume all this testimony is in the nature of what Mr. Aurich termed ex parte tests, referring to similar tests [448] of my witnesses, which are under the motion to strike.

The Court: It is in evidence.

Mr. Hackley: I object to the offer in evidence of the sample on the ground that it does constitute an ex parte test without notice to the opposite party.

The Court: It illustrates this witness' testimony.

(The core referred to was marked Defendants' Exhibit DD in evidence.)

Mr. Aurich: Q. How would you remove a core made with Core-Min-Oil that was as hard as Defendants' Exhibit DD, that is, remove it from the casting?

A. It would be necessary to use some sharp tool and hammer, or pneumatic tool, to remove cores of that nature from the castings.

Q. Now, you have mentioned something about retained strength, speaking of characteristics of core oils. Is retained strength something you want in a core, or something you do not want?

(Testimony of Harry W. Dietert.)

A. Retained strength is something we do not want.

Q. How do cores made with Core-Min-Oil compare with cores made with Linoil in that respect?

A. There is no comparison. Now, a Linoil core, when heated to temperatures above a thousand degrees, will disintegrate, whereas a Core-Min-Oil core, you can heat it up to 2500 degrees, and it still does not disintegrate or fall apart.

Q. What is the result of the high retained strength in Core-Min-Oil cores?

A. The result of the high strength of Core-Min-Oil cores is that [449] the core is difficult to shake out in the cleaning room.

Q. Have you actually experienced this difficulty yourself in working with Core-Min-Oil cores?

A. Yes, I have, and I have two comparisons that I would like to offer. I made Core-Min-Oil cores from the 30-degree solution, made the castings, poured them, took them from the mold, and then endeavored to shake them out. This 30-degree Baume solution core was very weak; it was too weak for satisfactory foundry use—strength weak. I refer to room temperature. Nevertheless, after a careful handling of the core, I was successful in putting the cores into molds, pouring them, removing the casting, and in the cleaning room I found that a fair comparison would be that the Core-Min-Oil cores required twice the effort that the Linoil cores required. Now, that was really an unsatisfactory core from a foundry production standpoint.

(Testimony of Harry W. Dietert.)

The shakeout was unsatisfactory, and the room temperature strength was unsatisfactory.

So the next move was to make a core that had this satisfactory room temperature strength from Core-Min-Oil, using the 24-degree solution, that is, a strength that I term satisfactory for foundry use. Likewise applied to castings and shakeout of the core. I used a simplicity shakeout machine, which is a mechanical vibrating table. The Linoil cores would shake out in less than a minute's time, whereas the cores made from the Core-Min-Oil would not shake out on this mechanical unit in ten minutes. The fact of the matter is, they did not even begin to shake out in ten—strike that—in five minutes' time. Five minutes was the limit that I let the castings remain on the shakeout unit.

In this last comparison, the Linoil cores and the Core-Min-Oil cores, after they were baked, had the same strength.

Q. Is the fact that the Core-Min-Oil cores did not commence to [450] shake out after five minutes on the shakeout machine, whereas the Linoil cores did shake out after one minute, a matter of any importance?

A. Yes, it is a very important factor.

Q. For example, do you know of any foundries that operate a shakeout machine on a conveyor system?

A. I knew any number of them. For example, Caterpillar, Pontiac Foundry, and so on.

(Testimony of Harry W. Dietert.)

Q. How do these vibrating shakeout machines operate on the conveyor system?

A. Well, take Pontiac Foundry, for example: The castings are snaked out of the mold with an air hoist, placed on a conveyor, and in this conveyor is located a mechanical shakeout table. The castings go along, slide from the shakeout table, which is set at an angle, and they are on that shakeout table for less than a minute's time, in some cases, and in case the core sand would not be removed, it would require additional labor; the castings would pile up around the shakeout machine, and the first thing you know you would stop the whole system.

Q. During all of these times you were working with Core-Min-Oil and Linoil that you have been describing, where were the cores made?

A. The cores were made at the United States Radiator Foundry, and also a large number of cores were made in my own laboratory.

Q. Did you ever bake any cores in the direct-fired oven of the United States Radiator Corporation?

A. Yes, I did.

Q. What was the result of cores so baked by you when you used Core-Min-Oil?

A. Of very inferior quality. [451]

Q. Did you attempt to pour any castings from any of the cores made with Core-Min-Oil?

A. I attempted to, but I did not, because I classified all these cores that were baked in a direct-

(Testimony of Harry W. Dietert.)

fired oven at the United States Radiator Corporation as unsatisfactory and unsuitable.

Q. Did you make any cores in your laboratory and bake them in your electric oven for use in the foundry?

A. Yes, I baked a large number of cores in the electric furnace in my laboratory for use in the mold.

Q. Can you tell us how many cores you made for the foundry?

A. For the foundry? I made a total number of 59 cores.

Q. Of those 59 cores how many were acceptable for casting purposes?

A. Twenty, which gave me a core loss of 66 percent.

Q. Have you prepared a sheet showing the number of cores made by you for the foundry, a general description of the cores, type of baking, and other information?

A. Yes, I have.

Q. Is that the sheet that I now hand you (handing document to the witness)?

A. This is the sheet which I compiled from daily notes, summarizing the result of cores that I made for the foundry.

Q. And that is taken from your daily record, is it?

A. It is.

Q. Does it correctly set forth the work done by you, type of oil used, and other data that appears on the sheet?

A. Yes, it does.

Mr. Aurich: In the interest of shortening the

(Testimony of Harry W. Dietert.)

trial, your Honor, I will offer this sheet identified by the witness, which is entitled, "Cores Made For Foundry, Summary Sheet," in evidence, and ask that it be marked Defendants' Exhibit EE.

Mr. Hackley: Are these tests which were made only at the radiator company, Mr. Aurich? [452]

Mr. Aurich: Well, I will ask the witness after the document is received. [452-A]

Mr. Hackley: I will object to the document as irrelevant and immaterial, for the reason that it merely refers to ex parte tests which have no probative value in a proceeding of this character.

The Court: It may be marked. Objection overruled.

(The document referred to was marked Defendants' Exhibit EE in evidence.)

Mr. Aurich: For your Honor's benefit, I might state that this sheet indicates the core oil that this witness used, type of mixing, number of cores made, and all that sort of information.

Q. I notice on Defendants' Exhibit EE, under the heading of "Oven Type," there appear the words "Direct" and, on occasions, "Indirect." What significance do those words have?

A. Cores that were baked in a direct-fired oven are marked "Direct," and where I have the term "Indirect," the cores were baked in an indirect-fired oven at my laboratory, which was heated by electricity.

Q. In other words, all the cores referred to on

(Testimony of Harry W. Dietert.)

Defendants' Exhibit EE opposite the word "Direct" under the heading "Oven Type" were cores baked at the United States Radiator Corporation or the Acme Foundry? A. That is true.

Q. And where the word "Indirect" appears, it indicates those cores were made, or baked, I should say, in your electric oven at your laboratory?

A. That is correct.

Q. Can you tell us approximately how many cores you made with Core-Min-Oil all told, taking the laboratory work and the actual work, for the foundry?

A. Yes, I made a rough count, and it totaled up to four hundred—for the foundry?

Q. That is right.

A. Totaled fifty-nine cores. [453]

Q. No, I mean total of all the cores made by you, Mr. Dietert, including those you made for the foundry.

A. Oh, yes, for the foundry. May I have that question read?

(Question read.)

A. My rough count was 456 cores, total number of cores made with Core-Min-Oil.

Q. Now, as a result of your work with Core-Min-Oil, and based upon your experiences in the art of core-making and foundry practice in general, is the Ruddle Solution made up according to either of the three formulas that you have referred to suitable for use as a core wash?

(Testimony of Harry W. Dietert.)

Mr. Hackley: I object to the question, your Honor, on the ground that as far as I recall, there has been no foundation laid for the discussion of core wash by this witness. I think this is the first time the words have been used with this witness.

Mr. Aurich: The witness is a thoroughly trained man in the art of foundry practice.

The Court: The core wash has to do with the outside of the core before it is used?

Mr. Aurich: Yes, your Honor.

The Court: Proceed.

A. I would consider the ingredients of Core-Min-Oil unsatisfactory for core wash.

Mr. Aurich: Q. Will you give us some of your reasons, briefly, for your opinion in that regard.

A. Core-Min-Oil contains sodium silicate, which is very hungry for water, moisture, and the wash on the core would soften quite rapidly in the mold, or even when the cores were stored. Another point, on the core wash we are not after a flint-hard surface. It is well known now that we want the core wash to be a little softer [454] than the core surface on which it is applied. If this wash is too hard, flint-hard, then it will spall when it is suddenly heated by the molten metal. By spalling I mean the core wash would flake off from the core.

Another point I would like to bring out is that in a core wash I like a material that is refractory. Sodium silicate is not a refractory material.

Q. Now, in your answer, Mr. Dietert, you referred to Core-Min-Oil. Did you mean a core oil

(Testimony of Harry W. Dietert.)

composed of what we have termed Ruddie Solution and asphalt emulsion, or did you just mean the Ruddie Solution?

A. I refer to both. My answer applies to the Ruddie Solution by itself, or to the combination of Ruddie Solution and asphalt.

Q. Will you state whether or not the use of Ruddie Solution, or Core-Min-Oil, as a core wash would result in the disadvantages that you have mentioned a moment ago of a core wash?

Mr. Hackley: I object to this, your Honor, as entirely speculative. I have not heard this witness even yet say he tried a core wash, made one, had any tests at all.

The Court: You can answer it; proceed.

The Witness: May I have that question so I may answer it correctly?

The Court: You had better reframe the question.

Mr. Aurich: I will reframe the question.

Q. You have described to us certain things that you said you did not have in a core wash, or that you did not want the core to have after a core wash had been applied to it. Will you state whether or not the Ruddie Solution would result in the core having those disadvantages that you mentioned?

Mr. Hackley: Same objection, if your Honor please. [455]

The Court: Let him answer it.

A. I would have the same objections to Ruddie

(Testimony of Harry W. Dietert.)

Solution, and it would have the same disadvantages when used as a core wash.

Mr. Aurich: Q. As a practical man skilled in the art of foundry practice, and particularly the are of coremaking, what if any commercial utility do you find in Core-Min-Oil when used either as a core wash or a core oil?

Mr. Hackley: I object to the question as calling for the conclusion of this witness and without proper qualification or foundation.

The Court: The objection is overruled. You may answer it.

A. I find no commercial utility for Core-Min-Oil or its ingredients.

Mr. Aurich: Q. As a practical man engaged in working in foundries, how much would you pay for the exclusive right to use Core-Min-Oil either as a core oil or as a core wash, over any given period of time, from one to five years, let us say?

Mr. Hackley: I object to that as calling for the conclusion of the witness, for which there has been positively no possible qualification made.

The Court: Do you mean what he might have paid for an article that was of no value?

Mr. Aurich: That is right, your Honor.

Q. Are you employed or retained by any concern manufacturing core oils today?

A. Yes, I am; by the Aristo Corporation of Detroit. They furnish the base oil for the Houghton core oil.

(Testimony of Harry W. Dietert.)

Q. What is lycopodium, and will you spell it for the purpose of the record, please?

A. Lycopodium, l-y-c-o-p-o-d-i-u-m, is a parting dust that is obtained from the pollen of moss. This moss is the Russian moss or seaweed, and it is imported from [456] Russia, and the parting is very expensive and used only on very expensive jobs, such as ornamental castings and pattern castings.

Q. I show you a casting which has heretofore been marked Defendants' Exhibit V. Do you recognize that casting?

A. Yes, I do. There is a number 714 (indicating).

Q. Did you have anything to do with it?

A. Yes; I made the casting and the core for it.

Q. What sort of core oil did you use?

A. I used Core-Min-Oil for making this core, and it was baked in an electric oven.

Q. Do you consider that a good casting or a bad casting?

A. I wouldn't know at this time, because the casting has not been cleaned. I would have to see the inside of the casting, see how the core shook out, and so on.

Q. Is the core that is contained in the casting Defendants' Exhibit V a good or a bad core?

A. I consider that as a bad core.

Q. In connection with that——

The Court: Q. Why do you consider that a bad core?

(Testimony of Harry W. Dietert.)

A. Because it does not shake out. If that was a good core, the sand would begin to run out and I would have to pay less labor to get the sand out of that casting.

Mr. Aurich: Q. You have mentioned some work that you have done with core oil made up of what we have termed Mr. Ruddell's solution and asphalt emulsion. In connection with your work in that regard, did you do any work with a core oil composed of straight sodium silicate solution and asphalt emulsion? A. Yes, I made cores.

Q. And, generally speaking, will you state how cores made with sodium silicate and asphalt emulsion compared with cores made with Ruddell solution and asphalt emulsion?

A. From all [457] practical standpoints they were identical.

Mr. Aurich: That is all.

Cross Examination

Mr. Hackley: Q. You have referred to Houghton Oil. Just what is Houghton Oil?

A. Houghton Oil is a core oil that is composed of polymerized mineral oil, a little thinner, and a vegetable drying oil, the choice of the vegetable drying oil depending upon the market.

Q. What are the actual oils that go to make up what you call Houghton Oil?

A. The mineral oil is a special treated oil by a process that is kept quite closely held, and this oil we pass on before it is shipped to the E. F.

(Testimony of Harry W. Dietert.)

Houghton Company of Philadelphia. They mix this special treated mineral oil, which dries very much like a vegetable drying oil. With vegetable oils, as I mentioned previously, it all depends on how the market is. Quite frequently they will use perilla and linseed. They may use soy bean oil, because this polymerized mineral oil acts as a catalytic agent to speed up the drying of the other oils that they mix with it.

For example, they can add it to soy bean oil. They can make the soy bean oil dry fast. Ordinarily soy bean oil is slow drying, and they can vary the speed of drying of this mineral oil so it speeds up the drying of it or retards it.

Q. Approximately what is the percentage of vegetable oil as against the mineral oil in the mixture?

A. That varies as [458] to the market. Whenever the vegetable oil markets, as they are now, get too expensive, why, they will use more mineral oil. If this mineral oil gets short, if there is a shortage of this mineral oil, why, they will use more vegetable. It is a compounded oil that lends itself to using different ingredients, and there is no set percentage that they work on. It is a good oil.

Q. Do you have any range established for the vegetable oil in comparison with or contrast with the mineral oil?

A. I do not believe that I could give you those exact ranges.

(Testimony of Harry W. Dietert.)

Q. Can you give us a general idea of what the range is?

A. Let's say about half and half, excluding the thinner.

Q. Did I understand you to testify that you had never testified in a lawsuit before as an expert?

A. That is right.

Q. Is this your first experience on the witness stand?

A. Yes, that is right.

Q. You testified to the making of cores with various formulas which you have described as Core-Min-Oil. If I understood the last answer you gave on direct examination, you referred to the making of cores with sodium silicate; is that correct?

A. I did not say that.

Q. Well, I do not know that I understood that last answer, and I would like to have you explain it. Do you remember the question and answer? If not, I will have the reporter read it.

The Court: Well, if you remember it, you propound the question to him, the thing you have in mind.

Mr. Hackley: I will follow the suggestion of the Court and ask this question and withdraw the previous question:

Q. Did you ever make any cores with a core oil in which sodium silicate was an ingredient, other than the cores referred to in [459] your testimony, which were made with what you have called Core-Min-Oil?

A. As I have stated, I have made cores with

(Testimony of Harry W. Dietert.)

sodium silicate, with the Ruddle solutions, with the Ruddle Solution, and with the Core-Min-Oil that is under discussion. I have left out the chemicals, not put the chemicals in as the patent states.

Q. Then you did make cores with sodium silicate, asphalt emulsion and sand only, is that correct?

A. Sodium silicate, asphalt and sand only? That is correct.

Q. During the course of these tests, in which you were instructed to make certain tests of Core-Min-Oil, is that correct?

A. That is correct.

Q. Have you any notes or memoranda of the results of your work with the sodium silicate product, that is, sodium silicate, asphalt emulsion and sand only?

A. Yes, I can show you the results.

Q. Were these tests made in some effort to perform experiments under the terms of one of the Ruddle patents that you just referred to?

A. My sole effort was to find out how much each ingredient of the so-called Core-Min-Oil imparted to the physical properties of the core oil.

Q. I do not think you understand my question. Will you read the question, Mr. Reporter.

(Question read.)

A. They were made during that time that I was working with Ruddle Solution, as set forth in the patent I was shown Friday.

(Testimony of Harry W. Dietert.)

Q. Which patent do you have reference to? And I hand you patents Plaintiffs' Exhibits 1, 2 and 8, which compose the two Ruddle and the Ruddle-Spotswood patents (handing exhibits to witness).

A. I refer to patent No. 2,193,346. [460]

Q. What particular part of the patent do you refer to as a basis for your testimony?

A. On page 2, paragraph 10.

Q. Lines—does it give the line number there?

A. No line number given that I see here, just paragraph numbers.

Q. Are you referring to the formula appearing on the top of the second column of the patent that you have just named?

A. That is the formula I used and refer to at the present time.

Q. Is that what you meant when you said you made sodium silicate cores under one of these patents?

A. I did not make the sodium silicate core under this patent; it was outside the patent, as far as that goes. I used the proportions as shown in that patent: 1750 cc's of sand, 125 cc's of solution, which you call Ruddle Solution, I believe, and 40 cc's of asphalt, and the right amount of water to temper it.

The next time I would use the same ingredients, with the exception that I would use 125 cc's of sodium silicate without the chemicals.

Q. And that is what you did when you made the sodium silicate cores, if I understand you?

(Testimony of Harry W. Dietert.)

A. Sodium silicate cores with asphalt.

Q. With asphalt emulsion, sand, and the amount of sodium silicate that you just described?

A. Yes, sir.

Q. Now, you were going to produce some evidence of your tests with the sodium silicate cores, were you? You turned to your notes a moment ago. May I examine this?

A. You may look at them if you care to. Shall I help you to explain it?

Q. Let me glance at it a moment and then I will ask you to do that. You have shown me a summary sheet entitled "Strength Tests of Core-Min-Oil Bonded Cores with and without Aluminum [461] Sulphate and Sodium Fluo-silicate." Explain just what that report refers to.

A. This report refers to cores that were made with Core-Min Oil and cores made with Core-Min-Oil where I left out the sodium fluo-silicate and the aluminum sulphate.

Q. Which set of tests refer to the ones where you left out both sodium fluo-silicate and the aluminum sulphate?

A. Group B.

Q. Will you just give for the record the comparative results of such a test as against a core made by you using the 24 Baume Core-Min-Oil that you refer to?

A. You want 24?

Q. Yes.

A. In Group B?

Q. I want a contrast or comparison, as the case may be, between the 24 Baume Core-Min-Oil core and the core made without aluminum sulphate and

(Testimony of Harry W. Dietert.)

sodium fluo-silicate. The Core-Min-Oil core with the 24 Baume, which contained the chemicals heretofore named, showed the tensile strength of 180 pounds and transverse of 35 pounds.

Q. How does that compare with the Core-Min-Oil core of 25 Baume?

A. That is the 25 Baume.

Q. How does that compare, then, to the one with the two chemicals, aluminum sulphate and sodium fluo-silicate, omitted?

A. Where it was omitted? The tensile strength is 145.8 and the transverse strength is 39; take the average of those, and within practical limits there is no difference. I can take you up to 32 Baume material and strength like this: 124 pounds with the chemicals—that is, tensile strength—35.2 pounds is the transverse. Now, with the Core-Min-Oil less the chemicals, instead of getting 124 pounds, I get 135.8 pounds, whereas with transverse that gives me 38.15 against 35 pounds. For all practical purposes you can leave out the two chemicals referred [462] to. Where there is strength or where there is moisture collapsibility, I could find no difference.

Q. You apparently have some opinion on this subject of cores. What in your opinion is an adequate transverse strength for a core of the same general size as the cores employed in these last reported tests or experiments, whatever you call them?

(Testimony of Harry W. Dietert.)

A. Transverse tests of adequate value would range between 30 to 40 pounds.

Q. And tensile?

A. Tensile, I would place the range between 145 pounds and 180 pounds.

Q. That is just your opinion, is it, or is that based on some authority?

A. Many years' foundry experience.

Q. The experience that you described here, is that correct? A. Pardon?

Q. The experience that you described here in this record? A. That is correct.

Q. What is the transverse strength of a core of the size reported in these last tests when made with Linoil, if you know? A. 49.9 pounds.

Q. And the tensile strength?

A. 180 pounds.

Q. What size did you say this core was that you have referred to here?

A. It depends on which test you refer to.

Q. In these last tests you have been referring to, I assume—I hope correctly—that your conditions were equal in the various cores; is that correct?

A. Absolutely correct.

Q. What size core were you using?

A. In the case of the transverse core, one inch by one inch by eight inch bar. In the case of the tensile core, it is A.S.T.M. tensile briquet, which has been adopted as standard by the American Foundry Association for testing the strength of cores. [463]

(Testimony of Harry W. Dietert.)

Q. And what is the size of that briquet?

A. That briquet is one inch in thickness at the narrow part where it breaks; it is one inch in width; and it has the two ears on it for testing.

Q. Did you use any approved grade of sand for the purpose of these tests?

A. I could have used the A.S.T.M. standard testing sand, but since I was very anxious to correlate the laboratory work and actual foundry work, I used the most popular core sand in the States of Illinois, Michigan, Ohio, New York, and other States.

Q. Can you define that sand for the record with reference to its characteristics?

A. I have a record here.

Q. Have you? All right. Will you just read the memorandum you have on the grading of that sand for the record, please.

A. There is a lot of data. You will find Lake sand used in all tests.

Sieve No. 6, 0 per cent retained.

Sieve No. 12, 0 per cent retained.

Sieve No. 20, 0.2 per cent retained.

Sieve No. 30, 0.3 per cent retained.

Sieve No. 40, 2.9 per cent retained.

Sieve No. 50, 10.8 per cent retained.

Sieve No. 70, 41.2 per cent retained.

Sieve No. 100, 41.0 per cent retained.

Sieve No. 140, 3.0 per cent retained.

Sieve No. 200, 0.2 per cent retained.

Sieve No. 270, 0.2 per cent retained

(Testimony of Harry W. Dietert.)

Pan, 0 per cent retained.

A.S.T.M. fineness No. 58.45.

That is all.

Q. You have referred to a core and casting, Exhibit V, offered [464] by the defendants in this proceeding, in the course of your testimony. If I understood you, you said that was one of the castings poured by you or under your direction in the course of these tests on a core made by you?

A. That is correct.

Q. And if I understood you, you stated you used one of these so-called Core-Min-Oil formulas to make the core that appears in that casting today?

A. Yes, I did.

Q. Have you any notes or records of that precise test by which Exhibit V was produced?

A. I have.

Q. Will you refer to them, please. [465]

Q. Mr. Dietert, you have testified to the making of certain experiments using three varieties of the so-called Core-Min-Oil formula, and with a product where you used only sodium silicate and asphalt emulsion with the sand. Did you make any other experiments with any other core oils than those which I have just described, and Linoil, for purposes of your testimony here? I am not interested in your past history, but only in this problem here.

A. Yes, I did. I made cores just with emulsion.

Q. Oh, you used just asphalt and sand?

(Testimony of Harry W. Dietert.)

A. That is right.

Q. And found that unsatisfactory, I assume?

A. Each of the ingredients. I made cores with just sodium fluo-silicate, just some aluminum sulphate—each of the ingredients I used separately.

Q. Then, can I put it this way: that the cores which you have worked with, other than those which were made with the standard brands of core oils, such as Linoil or Houghton Oil, and things of that sort, comprised cores made with some one or a combination of only the following ingredients: Asphalt emulsion, sodium silicate, sodium fluosilicate, aluminum sulphate, and some added water, plus, of course, the sand needed to form the core; is that correct?

A. I made also cores with what you might say—Ruddle Solution. There is one you didn't name.

Q. Ruddle Solution is composed of what, as you understand?

A. It is composed of water, aluminum sulphate, sodium fluosilicate, [466] and sodium fluosilicate.

Q. Sodium silicate, I think you mean.

A. Silicate, yes.

Q. And adding your last statement to your answer, the answer to my original question is that it is "Yes," is that right?

A. Yes, with the exception of the one I just gave you.

Q. Excepting that, yes. Prior to your work in connection with this case, and your testimony here,

(Testimony of Harry W. Dietert.)

have you ever made any cores with a core oil including sodium silicate? A. Yes.

Q. When was that?

A. The latter part of 1923.

Q. What kind of a formula did you use there?

A. We used sodium silicate and water.

Q. You were not able to make a satisfactory core, I take it, from that? A. That is true.

Q. Did you ever make any core at any time from any core oil consisting of albino asphalt and linseed oil? A. No.

Q. You were never called upon in connection with your testimony here to prepare cores made with such a product?

A. That is right, never was called on.

Q. Precisely what is the business of your company with reference to its precise activities?

A. It is two-fold: one, manufacturing; the other is testing or consulting.

Q. Taking the manufacturing end, what products do you manufacture?

A. Manufacture a complete line of American Foundrymen's Association sand and core-testing equipment, a line of moisture-testing equipment, and a line of spectrographic analysis equipment.

Q. That, I take it, your company does on a profit-making basis, as a commercial activity, is that correct? A. That is correct.

Q. Now, on the other side of your business what do you do?

A. Maintain a testing laboratory which is used

(Testimony of Harry W. Dietert.)

in connection with [467] our consulting service for the foundry industry and allied supply houses.

Q. Your testing laboratory is designed to test what products?

A. To test core oils and their ingredients.

Q. You mean by that, analyze them?

A. To analyze them—not necessarily to analyze them, but to make a physical property determination and the workability of core oils.

Q. In other words, use them to make cores, is that correct?

A. We make cores and testing, both, of the equipment.

Mr. Hackley: Q. What else do you do there?

A. We study the physical properties and analyze foundry sands where they are used for core sands or molding sands. We do likewise with various types of cores used in the foundry; do likewise with mold and core washes.

Q. Your company is generally known as a sand-testing laboratory, isn't that correct?

A. Well, it is known as a company that manufactures a line of sand-testing equipment, and also maintains this consulting service. With those qualifications I would say that the answer is "Yes."

Q. You referred to the Holcroft oven. Is that a direct- or indirect-fired oven?

A. That is a direct-fired oven, where the fire-box is independent of a battery of core ovens. The fuel is burned in a separate compartment and a

(Testimony of Harry W. Dietert.)

fan blows the heated air, plus the gases from combustion, through the battery of core ovens.

Q. The gases from combustion come into contact with the baking cores in that oven, do they not? A. Yes. [468]

Q. You have testified regarding direct-fired ovens and indirect-fired ovens and electric ovens. Now, what do you refer to as an indirect-fired oven?

A. An oven, for example, that is heated by electricity.

Q. Is that the only kind of indirect-fired oven you know about?

A. No, sir, it is not; I know of others.

Q. What are the others?

A. Where the oven is heated by means of steam, high-pressure steam piping within the oven.

Q. Do you know of any other indirect-fired ovens?

A. At the moment I can't recall any other indirect-fired oven, other than those two types I have named, that are actually used in a foundry.

Q. Other than the electric oven that you have described and the steam oven of the type that you have just described, are you familiar with any oven other than those, which effects the baking of the core without permitting the gases of combustion of the heating element—whatever that may be—to come in contact with the baking core? I am referring, of course, to foundry practice, you understand.

(Testimony of Harry W. Dietert.)

A. I don't recall one at the moment.

Q. You don't? A. That is right.

Q. Have you finished, Mr. Dietert?

A. Yes, I finished.

Q. Your answer was that you couldn't recall of any, is that right?

A. That is in use in actual foundry operation, that is right.

Q. Are you acquainted with the Young Brothers Company of Detroit, manufacturers of industrial ovens?

A. Yes, I have worked with a number of their furnaces—ovens and furnaces.

Q. They are one of the leading manufacturers of foundry oven equipment, isn't that correct?

A. One of the leading, yes.

Q. And you are familiar with them as a manufacturer of electric [469] foundry baking equipment, foundry ovens and the like?

A. Yes, I am.

Q. Are you familiar with this leaflet which I show to you, entitled, "Industrial Oven Notes, Young Brothers Company, January, 1927," for example?

A. No, I haven't made any particular notice of this leaflet.

Q. You have seen it, haven't you?

A. I don't know that I have seen this particular preprint—it is a preprint of an article.

Q. Familiar with the article, however?

(Testimony of Harry W. Dietert.)

A. No, I wouldn't say that I was familiar with the contents of the article at this time.

Q. Are you familiar with the publication known as the "O.E.L.A. Monthly"? A. No, I am not.

Q. Doesn't mean anything to you?

A. No.

Q. I want you to examine the leaflet which I have shown you here and state whether or not you agree with the context of the writer, in your capacity as a purported expert in this field, with reference to the use and adaptation, maintenance, operation, and all the rest, as described in the article, relating to electric foundry oven equipment.

Mr. Aurich: The question is objected to on the ground it is not proper cross examination, asking this witness to state whether or not he agrees with the contents of a document that has neither been authenticated nor proved in this case.

Mr. Hackley: The witness indicated, your Honor, that while he may not have seen this pamphlet, he was familiar with its general context.

The Court: Might as well go down and get the morning's Examiner. The objection will be sustained. [470]

Mr. Hackley: For purpose of identification I offer as Plaintiffs' Exhibit 56 the pamphlet entitled, "Industrial Oven Notes, Young Brothers Company of Detroit, January, 1927."

Mr. Aurich: Simply for purposes of identification?

Mr. Hackley: That is all it is offered for.

(Testimony of Harry W. Dietert.)

(The pamphlet referred to was marked Plaintiffs' Exhibit No. 56 for identification.)

Mr. Hackley: Q. Are you familiar with the equipment at the Keokuk Steel Casting Company in Keokuk, Iowa?

A. I am not, other than they have some of our testing equipment at that plant, but I have not personally visited the inside of this foundry.

Mr. Hackley: Q. You are not familiar, therefore, with their electric oven equipment?

Mr. Aurich: I object to that as assuming facts not in evidence; no evidence that that company has electric ovens.

Mr. Hackley: I am asking the witness if he knows, your Honor.

The Court: I don't know, but I doubt if there is a steel plant in America that has electric equipment.

Mr. Hackley: Well,—

The Court: I say that advisedly, so that we may get along with this case, and I will say further that on the electrical equipment here, on the showing made, unless you can make some showing yourself, or answer to the showing that is made, we are just wasting out time, and I don't waste anybody's time without telling them about it.

Mr. Hackley: We have adequate, and a great deal of evidence [471] on the subject of electric oven equipment. For example, the document I have before me happens to be a letter from this Keokuk

(Testimony of Harry W. Dietert.)

Steel Casting Company, describing an electric oven——

The Court: All right, make any showing you wish. It is not proper cross examination here. He said they used some of their equipment; that is all he knows about it; he never was there.

Mr. Hackley: Q. Are you familiar with the foundry equipment at the Vancouver Iron & Steel Foundry Company, Vancouver, Washington?

A. I am not familiar with that particular foundry.

The Court: Q. So that I may be straightened out, do you know of any steel plant in America that is using electrical equipment?

A. Yes, your Honor; there are very few of them, though.

Q. What percentage?

A. In the direct testimony Friday I stated it was from one to two percent of the total core ovens in America are heated by electricity, and that is a mighty few number of them. There are cases, it is true, but—if I can just continue—I verified that on a trip to Los Angeles: two small electric furnaces, one medium size; the total number of ovens I saw there was 28.

The Court: I can understand that there are plants specializing in this sort of—that have cores as big as a milk bottle—a small core, or something else, but beyond that, for production purposes, it is nil; it doesn't exist. I am only giving you the benefit of my own knowledge. Now, I may be in error

(Testimony of Harry W. Dietert.)

about it, but if I am, you may make any showing to the contrary. That is an issue in this case. Proceed to do it if you can.

Mr. Hackley: I am in a position to do it. It is just a question of how promptly it can be done with reference to this——

The Court: We are going into our second week in this case, [472] gentlemen, and we can't proceed with pamphlets you pick up, or any advertising matter that some concern may have to dish out their wares to the gullible public. That will not get us anywhere in this case. Now, let's proceed. I want to refrain from commenting on these matters, but it is my duty to see that we move along here, and I propose to do it.

Mr. Hackley: Q. When you were in Los Angeles did you visit the Stooddy Company at Whittier, California, to observe their electric equipment?

A. Stooddy?

Q. S-t-o-o-d-y. A. What town?

Q. Whittier, which is part of Los Angeles.

A. I didn't visit that particular foundry.

Q. What percentage of the foundries in Los Angeles do you think you visited when you went to 11 of them?

A. Roughly speaking, 50 percent.

Q. On what do you base that statement?

A. The fact that I called on the majority of the large foundries in Los Angeles and in its direct vicinity.

Q. How did you select the foundries that you

(Testimony of Harry W. Dietert.)

went to, and how did you decide to omit the others?

A. I didn't intend to omit any. I took a fair cross-section. I called up a friend of mine who sells foundry supplies, and he knows the foundries in that district, and I told him I wanted to see all of the electric ovens that he knew of, and he immediately took me to the one—showed me the little one at Warman Steel, and then we went over to Alloys Metal Foundry, the one I mentioned, and then we went to the other eight foundries—large ones. I missed a few of the large foundries, but not many of the large foundries. I dare say that my percentage, one and two-tenths percent, or thereabouts, still holds true. One and two-tenths percent of the foundries at Los [473] Angeles use the electric furnace, and some of them are awfully small.

Q. Are you acquainted with the foundry of the General Electric Company at Baltimore, Maryland?

A. Not in Baltimore.

Q. Ever been there?

A. I have been in Baltimore, yes.

Q. I mean to the foundry, of course.

A. No, not in the foundry.

The Court: They have a large foundry in Schenectady, and I worked at it. I am just trying to give you the benefit of my own experience here. We have been spending a week on it here, and they had experimental electric apparatus there, not only on cores, but on engines and everything, hoping to develop something to sell their wares. That was 35 to 40 years ago.

(Testimony of Harry W. Dietert.)

Mr. Hackley: We think, of course, that industry has made some progress in that time.

The Court: Oh, I hope so.

Mr. Hackley: I hope so. Your Honor, I am frank to say that I am going into this subject because your Honor challenged me the other day to name a single foundry in existence using electric ovens.

The Court: You are misquoting me.

Mr. Hackley: I don't intend to, of course,—to misquote your Honor.

The Court: I said there were toy electric furnaces to take care of small quantities of cores.

Mr. Hackley: Q. You went to the Warman Company, you said, in Los Angeles?

A. Yes, I did.

Q. You observed electric ovens there, and I think you said two additional large gas ovens and two additional medium gas ovens, is that right?

A. That is not right.

Q. Well, I tried to make a note of your testimony. You can correct [474] it if I am wrong. I haven't the transcript for today.

A. You are incorrect.

Q. Will you correct it, please?

A. At Warman Foundry I found one very small electric oven, which I classed as a laboratory size, and I found two large gas ovens and two medium size gas ovens.

Q. And then, if I understand you, there was

(Testimony of Harry W. Dietert.)

only one electric oven at the Warman Casting Company? A. That is right.

Q. Did you measure that oven?

A. Not with a rule, but my judgment is fair when it comes to looking at a thing. I judged the shelves were 32 inches wide this morning. They were——

Q. Your guess on it was that it was 32 inches wide? A. That is right.

Q. It was a four-drawer oven?

A. That is right.

Q. You said 54 inches high?

A. That is about the length of the drawer.

Q. Oh, the depth of the drawer?

A. That is right.

Q. What do you call a large gas oven?

A. One in which you could bake easily, per day, 25 tons of cores, plus drier.

Q. You referred to one of these ovens, or to two of these ovens at the Warman Company as being large gas ovens. I would like to know what you mean by the word "large".

A. Well, for example, the large ones were—the front of the—it is easily 10 to 12 foot in width, and it is 10 foot high, and 20 foot in depth.

Q. What do you call medium gas ovens—and I am now referring to the one at Warman?

A. The medium I would class in the six by eight by ten.

Q. Have you ever been to the Crane Company Foundry at Chattanooga, Tennessee?

(Testimony of Harry W. Dietert.)

A. No, I have not.

Q. Don't know anything about their equipment?

A. I do not. [475]

Q. Ever been to the New York Air Brake Company's foundry at Watertown, New York?

A. I have called there, but I didn't go into the foundry.

The Court: I also worked there.

Mr. Hackley: While it is not evidence, your Honor, these lists of names are all users of electric foundry oven equipment. I assume, of course——

The Court: Just like they are using in Los Angeles.

Mr. Hackley: I wouldn't call this oven up here at Yuba Foundry, seven feet by seven feet by nine feet, a toy oven.

The Court: At Yuba City?

Mr. Hackley: At Benicia; the Yuba Consolidated Gold Fields.

The Court: How many men working there?

Mr. Hackley: I don't know. This witness was up there.

The Court: That is the thing; you don't know.

Mr. Hackley: I don't think it is the number of men working, it is the production; it was producing two and three tons per week.

The Witness: That is their capacity in the foundry, and it still remains as a small foundry; very small foundry.

Mr. Hackley: Q. That word, "small," is your

(Testimony of Harry W. Dietert.)

term again. I say, that word, "small," is your term, which, of course,—

Mr. Aurich: I object to the question as argumentative. A. That is right; it is my term.

Mr. Hackley: Q. What about the United States Destroyer Base at San Diego? Are you familiar with the foundry there? A. No, I am not.

Q. Or the Navy Department's base at Pearl Harbor? A. No, I am not.

Q. The Joliet Steel Company, at Joliet?

A. I have not [476] been in that particular foundry.

Q. Don't know anything about the equipment there? A. No.

Q. Norfolk & Western Railroad at Norfolk, Virginia? A. Yes; they have a small furnace.

The Court: I take it you are going to make a showing on these foundries.

Mr. Hackley: I am going to make an effort to.

The Court: What do you mean by "effort"?

Mr. Hackley: We have one man in San Francisco who is familiar with some of these plants, and we are trying to get a man from the east who is familiar with the rest of them before this trial closes, for the purpose of testifying in rebuttal to this testimony that we have heard here.

The Court: Get through with this witness and get him here.

Mr. Hackley: Q. How about the Gleason Works at Rochester, New York?

A. Yes, they have an electric oven.

(Testimony of Harry W. Dietert.)

Q. Luckenheimer, at Cincinnati, Ohio?

A. I have been in that foundry, but I have not seen an electric oven. The big ones are not electric, and so this electric oven that is there, if it is there, it must be very small.

Q. What about the size of the oven at Gleason? Do you remember it well enough to tell us?

A. I would class it in the medium size. It doesn't strike me as a large oven at this moment. I know it was not a main unit.

Q. How about the foundry that the War Department maintains in McCook Field, Dayton?

A. I have not been in that foundry; it is not a large foundry.

Q. Hall Iron & Steel at Quebec, do you know that one at all?

A. No, I haven't been in it; I know of it.

Q. Or the General Steelware's Foundry at New London, Ontario? [477]

A. No, I have not been in that foundry.

Q. In the course of your direct examination, in the early part of your examination, you referred to the fact that Core-Min-Oil cores were affected in the direct-fired ovens by what you call CO₂ gas. You mean carbon dioxide, I assume?

A. I do.

Q. How did you determine that they were affected by carbon dioxide?

A. I made an actual test run.

Q. That was at the U. S. Radiator plant?

A. No, it was not; it was in my laboratory, where

(Testimony of Harry W. Dietert.)

I have controlled the equipment for measuring and supplying the CO₂ gas.

Q. You supplied CO₂ artificially to the core while baking? A. That is correct.

Q. In an electric oven? A. That is right.

Q. In other words, you had no normal gas of combustion in the oven, and you added CO₂ to test the effect? A. That is right.

Q. And you were satisfied that the cores made with Core-Min-Oil in the presence of carbon dioxide were valueless, if I understand you, as cores?

A. That is true.

The Court: Am I wrong, Mr. Hackley, in making the statement that your own witness so testified?

Mr. Hackley: And we concede that to be true.

The Court: Then why spend the time on it?

Mr. Hackley: I was particularly interested to find out how this witness determined it, or why he wasted any time on it, because after all, we have never contended that that was not true.

The Court: I didn't indicate that he wasted time; I indicated that you are wasting your time.

Mr. Hackley: I will make no further comment.

Q. Mr. Dietert, you spoke of the fact that Core-Min-Oil was subject to criticism because it was not what you called a ready-to-use [478] product, as you said; it was not a single-package product.

A. That was one of the disadvantages I found.

Q. Now, did you compare the time that it took to mix core sand with Core-Min-Oil, with the time

(Testimony of Harry W. Dietert.)

it took to mix core sand with Linoil, for the making of the same type of a core?

A. I made a comparative study in the foundry.

Q. Did you compare the time, the mixing time?

A. I found this: I used the same time, and I didn't get the asphalt distributed over the sand particles. I mixed it for seven minutes in a paddle type of mixer at the U. S. Radiator Corporation. I got a very inferior mix. That is the standard length of time used to mix a linseed oil like Linoil.

Q. Were you advised by the Shell Oil Company that Core-Min-Oil cores should not be mixed by a beater method? A. By what?

Q. By a beater method; that is, with a paddle type mixer of a Muller equipment—of that character.

A. I wasn't advised by Shell to that extent. In my work I started with a fresh slate.

Q. Did you observe, in the course of your preparation of Core-Min-Oil core sand, before you formed the cores, that after the sand came out of this type of mixer you used, the asphalt emulsion had broken down, separated, and that the asphalt was stringy or gummy?

A. I didn't draw that kind of a conclusion. My conclusion was that it did not mix well in a paddle type, and we had to use some intensive former mixer. With the intensive former mixer I got a good mix. That would be the Simpson mill, where you have the two wheels, and it revolves around in a pan, and then there is the clear pan type.

(Testimony of Harry W. Dietert.)

Q. Those two types of mixers produced a satisfactory mixture of sand and core oil?

A. So far as the distribution of the [479] ingredients was concerned, only.

Q. And did you observe whether or not the emulsion was broken in the course of that mixing, or would you know from your experience whether or not the emulsion was intact?

A. I am afraid that the question is a little bit too broad, but I can say that I did not observe that the emulsion was broken, nor did it concern me particularly, because if I got a good mix, why, that is what my object was, to get a good mix.

Q. You didn't care whether the emulsion had broken down or not?

A. If the emulsion had broken down I would have been concerned, because I wouldn't have got a good mix. I was interested in the material to that extent.

Q. Did you make any cores using a wet sand instead of a dry, or dried sand—using Core-Min-Oil, of course?

A. I don't believe in using wet sand, so I didn't make any mix with wet sand. I did make a mix with a moist run of sand, which was damp; if it had been wet it would have been no use for me to have started to make the sand batch in the first place.

Q. You don't consider run-of-the-mine sand to be wet sand, in the trade sense?

A. Not necessarily. Let's call it damp sand.

(Testimony of Harry W. Dietert.)

Q. You didn't make a moisture determination of the run-of-the-mine sand that you used?

A. That would vary. We made moisture determinations, yes.

Q. What is the range in your territory for run-of-the-mine sand?

A. Went up to 5.2, on a rainy day.

Q. What was the moisture content of your so-called dry sand, or dried—did you say “dry” or “dried”?

A. We actually dried it.

Q. You did actually dry it——

A. To zero. [480]

Q. To zero? A. Yes.

Q. Did you make any cores with run-of-the-mine sand? I so understood your testimony.

A. Yes.

Q. What Core-Min-Oil formula did you use when you made cores with the run-of-the-mine damp sand, as you called it?

A. I used the 24-degree solution, and the mix was 1750 cc's of run-of-the-mine sand, the dried basic amount, that is, correcting for the larger content that was in the damp sand.

Q. That is, making allowance for the weight of the moisture, is that correct. A. Correct.

Q. By extracting the moisture, but allowing for the weight?

A. That is right. I used 125 cc's of 24-degree Baume solution and 40 cc's of Y-104 Shell emulsion. No water was added. Incidentally, I chose this formula because it is the least sensitive to mois-

(Testimony of Harry W. Dietert.)

ture. If I would use the 32-degree, which is a very sensitive mix, I would have been unfair.

Q. Is the cost of core oils a factor in the adoption of a core oil by a foundry, in your experience?

The Witness: May I have that first part?

(Question read.)

A. Yes, the cost is a factor. You must also consider the quality.

Mr. Hackley. Q. Taking only the question of cost, what do you describe as the cost to a foundryman of core oil? What factors go to influence them in reaching a cost?

A. For a core oil, the cost would be the cost per gallon, the freight and the unloading labor, the storage space occupied by that material, and any additional labor that might be required in adding the ingredients to the mixer.

Q. Anything else? A. I think that is all.

Q. Wouldn't you include the operating time of the product made with [481] that core oil? In other words, the saving in fuel in the shorter baking time? Would you credit that to the cost of the core oil that saved fuel?

A. To date all the fast-baking oils have been more trouble, so, with my present experience, I am not considering the ease of baking until it is proved by the time of baking.

The Court: As a matter of fact, is there an actual relation, and if so, how much, from your experience?

(Testimony of Harry W. Dietert.)

The Witness: From my experience with Core-Min-Oil and, say, Linoil, it evens out. I can bake Core-Min-Oil cores, if they are real small, say one inch in thickness, in one-third of the time I can with Linoil, but as soon as I get a core, say seven inches in thickness, the advantage is lost.

The Court: There are seven brands of oil to mix cores with outstanding in the trade?

The Witness: The seven that I named the other day, yes, they are outstanding.

The Court: Q. Now, what is the spread between them in relation to drying a core?

A. Practically all the same, your Honor; very, very little difference.

The Court: That is the only reason I wanted to ask the question. Here are seven brands about which I know nothing. They are commercially on the market. We are here discussing an oil that may do it in half the time, which is erroneous, after all. It may or may not, I don't know. But I asked him in relation to oils that are on the market, and the differential between those oils in drying time.

Mr. Hackley: As I understood the witness, he said all these seven brands on the market dry in approximately the same time.

The Court: Yes. [482]

Mr. Hackley: And the testimony we have here by this witness, so far as small cores are concerned, is that the Core-Min-Oil dries in one-third of the time.

The Court: All right.

(Testimony of Harry W. Dietert.)

Mr. Hackley: Now, what I propose to show, if we can get it here, is that one of the major considerations in a foundry is the cost of the fuel for baking cores——

The Court: I understand.

Mr. Hackley: ——and that the factor of the saving of fuel or the loss of fuel is a very important one.

The Court: All right. That is your testimony, and that is the showing that you make. He has given seven leading brands commercially used, and there isn't any differential in the time.

The Witness: That is true, your Honor, unless the core is very small. If you group big—really large cores together, it evens out.

Mr. Hackley: I don't know; I think we are all talking at cross purposes here, for this reason——

The Court: I think we are, and I am just calling those things to your attention. Proceed.

Mr. Hackley: Any time I could bake in a third of the time I would think I had an advantage.

The Court: That would be a good thing to dream about, but it is not practical—doesn't work out in practice, and there are men who have been at the foundry for a good many years; they ought to know more about it than we do here.

Mr. Hackley: The word I would prefer to accept on it is that of these men who came right out of the foundry the other day and said they really baked it in a third of the time.

The Court: We are talking now about a trade, about an [483] activity going on all over the country.

(Testimony of Harry W. Dietert.)

Mr. Hackley: I would assume that if it would bake in a third of the time in Alameda County it would bake in a third of the time anywhere.

The Court: That is no answer to the seven leading brands used commercially.

Mr. Hackley: Q. So that we have a record on the matter, Mr. Dietert, it is your testimony that these brands that you mentioned in the course of your direct examination, all of which are commercial core oils, bake in approximately the same length of time, is that correct? A. That is right.

Q. And it is your testimony, at least on these small cores, as you have defined them, that Core-Min-Oil will bake in one-third of that time, is that correct?

A. That is correct, when the thickness of the core does not exceed one inch.

Q. I accepted that definition of small for the purpose of the question. Now, are you able to calculate from your experience what the fuel saving would be in cores baked in one-third of the time, to a foundry, based, say, on a per-ton of castings?

A. Considering—yes, considering the fact that you have to use an indirect furnace, which is a lot less efficient than a direct furnace for this particular oil that you have in discussion, there is no—I would say practically no saving.

Q. That isn't the question. I am asking the simple, direct question: Is the saving of two-thirds of the baking time on cores a material factor in

(Testimony of Harry W. Dietert.)

foundry practice? Assume nothing else but that one thing in your answer.

A. If you don't have to watch the brittleness of the core baking, yes.

Q. If I came into your foundry with a core oil that I could prove to you was equal in every way, we will say, to linseed oil, and [484] that cores made with that oil baked in less time than the core oil you were now using, would I be offering an attractive product to you?

A. If that was possible, yes.

The Court: Let's not deal with possibilities; let's proceed, gentlemen.

Mr. Hackley: Your Honor, that question is directed right to the very heart of this action.

The Court: That is your theory of the case, but the Court does not agree with you.

Mr. Hackley: I don't want to be arguing the case in the middle, your Honor, because I can tie these things together, I think.

The Court: I am anxious to get through; that is the only thing I am anxious about in this case.

Mr. Hackley: Q. Do you consider the problem of smoke given off in the pouring operation a factor in connection with the core problem?

A. Yes; if that smoke is objectionable to the nostrils of the workmen around, certainly.

Q. And I assume that a core oil which produces less smoke, or no smoke is more desirable than one which is smoke-producing, everything else being equal, is that correct?

(Testimony of Harry W. Dietert.)

A. It is desirable in that one factor, yes.

Q. Did you observe whether or not Core-Min-Oil produces any substantial amount of smoke at the time of pouring?

A. They all produce smoke, because they have emulsion in them, which smokes, and it is oil.

Q. My question is: Did you observe it?

A. Yes, sir.

Q. Now, you are stating that to be your observation, is that right? A. That is right.

Q. How much smoke did it produce, compared with Linoil cores? [485]

A. The amount of smoke was about the same as with Linoil. It was a little lighter in color. It was diluted with steam.

Q. Did you determine whether or not it was more or less offensive to the operator, the pouring operator?

A. I didn't find much difference between the two oils, the one being offensive and the other not offensive; about the same.

Q. You have spoken of a product called apshalt emulsion which you said you used in making these tests, which was given to you by the Shell Oil Company, is that correct?

A. Which was sent to me by the Shell Oil Company, yes, sir.

Q. And you called it Y-104 Colas Premix, is that correct? A. That is correct.

Q. On what do you base the statement that that is the product that you had?

(Testimony of Harry W. Dietert.)

A. The can was so labeled, and the shipping receipt at my plant, and the bill of lading of the shipment showed it came from the Shell Oil Company.

Q. Did you make any analysis, or have any analysis made of the product which you call asphalt emulsion Y-104?

A. I made no analysis myself of that particular material—chemical analysis, I refer to.

Q. You don't know what the formula, then, of the product that you used was, do you?

A. I do not know the exact formula of that particular emulsion.

Q. Do I understand that in coremaking practice with Linoil, for example, it is necessary, in the same core, to use on occasions, some several different types of core sand to make the same core?

A. Oh, yes; there are different sands.

Q. For different parts of the core, is that correct?

A. No, not necessarily.

Q. Explain it, if you will.

A. Well, we mix at times a finer [486] sand with a little coarser, and we get the porosity or permeability of grain structure, which will eliminate penetration and give us a casting surface as desired.

Q. Did you determine that with Core-Min-Oil sand it is practical to use the same sand; in other words, the same core mix for all parts of the same casting, where with Linoil you would have to use several types of sand?

A. I don't think that I stated that with Core-Min-Oil, that you could use just one type of sand,

(Testimony of Harry W. Dietert.)

so I can't agree with that question; I didn't find it so.

Q. Did you make any test to determine that fact, one way or the other?

A. I found this: that the casting surface that was obtained with Linoil and with Core-Min-Oil were identical in casting finish. The corners of one—the corner produced in casting by one was equal to the corner produced by the other. So I wouldn't class either one as being superior to the other. If you would have to use two sands for the one you would have to use two sands for the other.

Q. You referred to the warm strength of your cores. That, I understood you—and correct me if I am wrong—referred to the strength of the core to permit the necessary handling of the core after the baking operation and while it was still warm, is that correct?

A. That is correct.

Q. Now, what is regarded by you as a minimum warm strength in practice, of pounds, which is adequate for core-making purposes?

A. Thirty pounds.

Q. You referred to the determinations which you made with reference to the strength of hardness of cores molded respectively with Linoil and Core-Min-Oil. I think you said you used, for the purpose of the Core-Min-Oil test, the 24 Baume produce, is that [487] correct?

A. I did use that solution, yes.

Q. And you said that the loss on Core-Min-Oil was 82½ percent, and Linoil, 58 percent, in a seven-hour test, if I have your testimony accurately

(Testimony of Harry W. Dietert.)

noted. I want to lay this foundation carefully, so correct me, if you will, on any misquotation I may make. You have your notes, have you, that you used this morning?

A. Yes, sir. The length of time was $16\frac{1}{2}$ hours in the mold, and not seven.

Q. How about in a humidor?

A. In the humidor was a 24-hour test.

Q. What was the strength of the cores, if you made a determination of it, in pounds, at the outset, before the standing test was made?

A. The core made with the Linoil, the strength for that particular core mix was made particularly low, because at that point it was a most severe test. For the Linoil I used a core with 116 pounds original strength, and at the end of the run of $16\frac{1}{2}$ hours in the mold I had $48\frac{3}{10}$ pounds. With the Core-Min-Oil I used the 24-degree Baume solution and got the hardest core I could get, which was 196.6 pounds, and at the end, only the strength of 36.3 pounds, as compared to Linoil, which had 48.3 pounds strength. It had a head start and ended behind.

Q. On what did you base your calculation of 82 percent loss in the Core-Min-Oil pour?

A. The loss of strength from beginning to end of the test.

Q. What I am trying to find out is how you arrived at 82 percent as being a loss factor, between 196 and 36.

A. Take the difference——

Q. Is your figure 18 percent——

(Testimony of Harry W. Dietert.)

A. No, no; 58 percent is the strength loss of the Linoil core from the beginning of the test to the end of the test, and it is a difference in percentage between the tensile test of the original [488] core and then the tensile test of the core after being in the mold for 16½ hours, and with Core-Min-Oil it lost 82.5 percent in that same time, under exactly the same conditions, in the same mold.

Q. You had one with a 36-pound strength—Core-Mine-Oil; and Linoil with a 48-pound strength?

A. 48.3.

Q. And what is an adequate strength at that point for pouring purposes?

A. I feel that the core should not lose more than, say, 60 percent, or thereabouts.

Q. Regardless of that, an adequate strength for a core at that point is 30 pounds, isn't that true?

A. No, that is your transverse strength. You are thinking of warm strength now, and this is a tensile strength test, in which the tensile test specimens were placed within the mold and placed in the tensile test. You have two strength tests, the warm and the tensile.

Q. What do you consider to be an adequate tensile strength, then?

A. At room temperature?

Q. The temperature under which those tests were made, whatever that was.

A. As I stated before, between 145 to about 185 pounds.

Q. And neither the Core-Min-Oil core nor the

(Testimony of Harry W. Dietert.)

Linoil core were sufficiently strong at the end of these tests for any purposes?

A. Your correlation does not hold. This 36 and 48 pounds is the mold tensile strength and not the room; entirely different story.

Q. What is the adequate mold tensile strength in your opinion, for casting purposes?

A. Judging from my experience with Linoil and other oils that we have, similar to Linoil, it would be easy to answer: 145 pounds or so.

Q. Did you pour any castings with either the Linoil or the Core-Min-Oil cores under those conditions after the waiting period that [489] you have spoken of?

A. I have with Linoil. I have kept them in longer than that, and large numbers, in fact; particularly when the cupola would break down—keep them there for 24 hours. With Core-Min-Oil I made no test on actual castings when they were sitting in the mold a long while. It fell short so far that I didn't feel it was necessary to make the tests, from my observation. I know that Linoil just gets by. We want something better and not something worse.

Q. You stated that you made a total of 456 Core-Min-Oil cores, is that correct? A. Yes.

Q. And you have reported on 59 of those in this sheet, Exhibit EE, that you have produced?

A. That is true.

Q. Where are your reports, or your original notes on the work done with the other 400 cores?

A. They are in the book that I hold in my hand.

(Testimony of Harry W. Dietert.)

Q. Why did you select these 59 for the purpose of your record here?

A. I didn't select those 59 for the purpose of my record. I have the others right here, that I am referring to. I have made no selection up to date.

Q. How did you happen to pick out this particular 59 and mount them on the sheet, Exhibit EE?

A. Those particular 59 were made for foundry tests, the actual foundry tests.

Q. How do they distinguish from the other 400, then?

A. These other 400 were made for actual physical property tests, when I determined the gas content, and the strength, and so on, the other features that we had to study.

Q. Did you ever make any tests of any sort of a core wash made with Ruddle solution alone?

A. No, I have not.

Q. Did you ever make any tests of a core wash made with the so-called solution that you have referred to as Ruddle Solution and [490] asphalt emulsion alone?

A. No, I have not.

Q. Did you ever make any tests of a core wash in which you had its qualitative constituents the Ruddle Solution and carbon black?

A. No, I have not.

Q. Ever requested to do that by the Shell Company?

A. No, I was not.

Q. Did you ever make any tests of a core wash made with the Ruddle Solution and graphite as constituents?

A. No, I have not. [490-A]

(Testimony of Harry W. Dietert.)

Q. Did you ever make any tests of a core wash made with Ruddle Solution and diatomaceous earth as its constituents?

A. No, I have not. Neither would I attempt to, because diatomaceous earth is not necessary to consider. It is a refractory material and there are too many other refractory materials to choose from.

Q. What do you class as refractory material for use for core wash purposes?

A. A material that would have a sintering point of about 125° Fahrenheit.

Q. What do you consider to be a good core wash on the market at the present time?

A. I consider those core washes that contain graphite or coke as good core washes for gray iron. For steel I select a silica flour or magnesite as the better face, and for bronze I like the tapioca flour base the better.

Q. Are you familiar with the core wash called Plumbago?

A. If you want to call Plumbago a core wash, yes. I am familiar with Plumbago.

Q. Don't you term it a core wash?

A. No, it is Plumbago. It is not a core wash until you put something else with it, like water.

Q. You are familiar with the core wash made with Plumbago? A. That is right.

The Court: That is as far as it progressed in my day; that is all they had for core wash.

Mr. Hackley: Q. Plumbago is very widely used today as a base for core wash, is it not?

(Testimony of Harry W. Dietert.)

A. Yes, it is a very common ingredient in core wash.

Q. In fact, the so-called Plumbago core washes probably dominate the commercial market, don't they, in volume?

A. I wouldn't go so far as to state they dominate the [491] field, because in our heavy work we now use the powdered coke base material, and it is, if anything—since it is used on heavy work, the larger volume, maybe, is of the coke base and not the Plumbago. It used to be all the Plumbago; now we have the coke base very commonly used.

Q. That is a comparatively recent product in the commercial market?

A. Yes, it would be comparatively recent.

Q. What is used with Plumbago to prepare it into a core wash?

The Court: Spring Valley water. Water, isn't it?

The Witness: That is right, and a few little binders like bentonite to keep it from settling.

Mr. Hackley: I doubt if you can get the witness to limit himself to Spring Valley water.

The Court: I say this, gentlemen, because we are not making any headway here. We are dealing in mechanics and we are not dealing with the substance of the issues here involved. I would like to have you move along. [492]

Mr. Hackley:

Q. What particular formula did you use for the core that appears in Exhibit V?

A. I used 24——

(Testimony of Harry W. Dietert.)

Q. Just give me the exact formula that you used to make that core, and if you have notes, refer to notes.

A. I used 1750 cc's of dried sand, 125 cc's of 24-degree Ruddie Solution, and 40 cc's of Shell Emulsion and water.

Q. What effort did you ever make to shake out the core that is in that casting?

A. That casting was dropped once or twice, but I had other castings just like that, and as I testified this morning, I put some of those castings on a mechanical shakeout and they did not shake out, whereas the Linoil did shake out. It was a fair comparison.

Q. There has been no effort to shake out the sand in this casting?

A. That casting had just been removed from the mold and no effort made to shake it out, except it was shipped in a box from Detroit to San Francisco, which is a good shakeout process in itself.

Q. What formula did you use to prepare this core, Exhibit DD?

A. I used a formula 1750 cc's of sand, 80 cc's of 32 Baume solution, 50 cc's of Y-104 emulsion and water.

Q. What is the amount of asphalt, cc's of asphalt, that you used in the 24 Baume again?

A. 50—80.

Q. 50 of the solution and 80 of the asphalt?

A. Correct.

Q. In Exhibit DD you had what?

(Testimony of Harry W. Dietert.)

A. That is it.

Q. DD is the 24 Baume? I thought you said 32.

A. This is 32—80 cc's of 32 solution.

Q. My other question was, or intended to be, at least, What was the amount of asphalt used in the core, in Exhibit V?

A. That one has 40 cc's.

Q. 10 cc's less of asphalt in Exhibit V than in Exhibit DD, is [493] that correct?

A. That is correct.

Q. How long did you bake the core in Exhibit V?

A. V is the casting.

Q. The one in the casting is Exhibit V?

A. That one there.

Q. No, Exhibit V.

A. V is a casting. I baked my cores for those castings there, as a rule, in 45 minutes in an electric oven at 350° Fahrenheit.

Q. And how long did you bake the core Exhibit DD?

A. That is a half hour at 350.

Q. In what kind of an oven?

A. Electric oven.

Q. Do you consider yourself to be acquainted with the general core oil market in the United States?

A. Under the interpretation of "market"—my interpretation of "market," yes.

Q. How do you interpret the word "market"?

A. What the core oil should consist of, how competitive the field is, how exceedingly competitive a

(Testimony of Harry W. Dietert.)

field it is, and it is an important subject, what you might do with certain oils. I work with that every day.

Q. What is your estimate of the gallonage of core oil consumed in the United States in the year 1940, if you know or have any estimate?

A. Oh, I have a fair estimate from firms that make oils and keep up with it. Around 10,000,000 is what I thought the total market was for 1940.

Q. This is not based upon any investigation of your own but something somebody else reported to you?

A. My investigation and the opinion of two other companies. One is the sales manager of the largest oil producer in America, and his estimate and my estimate agree.

Q. I understood all of your tests have been made, these experiments that you have talked about, since the 25th of this last [494] October?

A. That is true.

Q. How long did your test take you all together in point of time?

A. Four weeks—a little over four weeks.

Q. Are you being paid for your testimony here?

A. Oh, yes.

Q. What is your charge? A. My usual fee.

Q. What are you charging?

A. \$50 a day whenever I am at my office or laboratory; \$75 for every day that I am away from my office, plus traveling expenses.

(Testimony of Harry W. Dietert.)

Q. How many days have you devoted to this case since you started on the job?

A. I don't know that exactly. I started on the 25th. I never counted them up. I arrived in San Francisco on the 24th, I think it was, and since that——

Q. 24th of what? November?

A. November, correct.

Q. And in the period between the 25th of October and the 24th of November, how many days did you charge to the Shell Oil Company?

A. As I told you, I have not figured that up.

Q. What would you estimate? Half the time?

A. No; full time.

Q. Oh, full time in that period?

A. Oh, yes.

Q. You have worked continuously for the Shell Oil Company since the 25th of October, isn't that correct?

A. That is true.

Q. There was no representative of the plaintiff, or Messrs. Peck or Ruddle, present at these experiments that you have conducted and you have talked about in your testimony, was there?

A. No.

Mr. Hackley: That is all with this witness, your Honor.

Mr. Aurich: I have no redirect examination, your Honor, but I have just one question which I neglected to ask this witness.

The Court: I was about to take a recess. I will allow you to ask that one question. [495]

(Testimony of Harry W. Dietert.)

Mr. Aurich: Just one, your Honor.

The Court: Very well; proceed.

Mr. Aurich: Q. There has been some testimony in this case, Mr. Dietert, concerning the hooding of cores in a direct-fired oven to prevent the gas, combustion gases, that is, from coming in contact with the cores. Will you state whether or not in your opinion you consider the hooding of cores an operation that could be carried on successfully in any large foundries?

A. It would be considered by myself as a very unsuccessful method and impractical.

Mr. Aurich: That is all.

Mr. Hackley: Q. Did you ever try to take any cores with a hood over them, Core-Min-Oil cores?

A. No, I did not.

GRANT E. WARREN,

Called for the Defendants; Sworn.

The Clerk: Please state your full name to the Court.

A. Grant. E. Warren.

Direct Examination

Mr. Aurich: Q. Will you keep up your voice, Mr. Warren, so that all in the courtroom can hear you, please. What is your age?

A. Thirty-three.

Q. Your residence?

A. 127 Arreba Street, Martinez, California.

(Testimony of Grant E. Warren.)

Q. And your occupation?

A. Technologist or research chemist.

Q. Are you a graduate of any university and, if so, will you tell us what university and what degrees you have?

A. I graduated from Stanford University. I have a degree of Bachelor of Arts and Engineering. [496]

Q. You are employed by the Shell Oil Company, one of the defendants in this case?

A. That is right.

Q. And you have been since about August 1933?

A. That is correct.

Q. You are employed at the Martinez Refinery?

A. Yes.

Q. What are your duties at the Martinez Refinery, just briefly, please?

A. Research on the manufacture and application of asphalting products.

Q. Did you ever do any work in connection with core oils? A. I did.

Q. What was the nature of the first work that you undertook with regard to core oil?

A. The first item was the analysis of an emulsion submitted by our sales department which was manufactured by the Union Oil Company.

Q. What was the purpose of your analyzing that emulsion?

A. I do not know that I can give you the purpose, except that it was submitted by our sales department with the request that we analyze it. I

(Testimony of Grant E. Warren.)

found out later that it was in connection with the Core-Min-Oil.

Q. Did you make any comparison between that Union Oil emulsion and any asphalt emulsion manufactured by Shell?

A. Yes. I compared that emulsion with Series Y-104, Colas Premix, and found them substantially the same.

Q. Without regard to any document now, can you tell me approximately when you made that analysis and comparison?

A. I believe in January 1938.

Q. You kept records of your work in that connection, did you? A. Yes.

Q. In notebooks? A. In a notebook.

Q. Is this the notebook to which you refer which I now show you, [497] which is marked with the name "Warren" on it? A. This is, yes.

Q. And portions of that notebook contain matters and data relating to your work on core oils, do they? A. Yes.

Mr. Aurich: I now offer in evidence as Defendants' Exhibit FF photostat copies of the pages of the notebook of the witness relating to the work done by him on core oils.

(The photostats referred to were marked Defendants' Exhibit FF in evidence.)

Mr. Hackley: Mr. Aurich, this purports to be all the parts of the notebook which refer to core oil?

Mr. Aurich: So I understand.

(Testimony of Grant E. Warren.)

Mr. Hackley: May I check the original notebook after the recess?

Mr. Aurich: Why, certainly, and if through inadvertence there are any portions omitted, why, we will be glad to furnish them.

Mr. Hackley: Subject to correction if error is found.

Mr. Aurich: Q. Following the analysis of this Union Oil emulsion and comparative tests between it and Shell's Y-104, did you do any further work in connection with core oils?

A. Yes. The next item was the preparation of experimental samples of two special emulsions for trial in core oil mixes.

Q. Can you tell us just briefly and generally what you did in that connection?

A. One was an emulsion prepared in the same manner as Shell's Y-104 Colas Premix, except with a lower alkali content so as to obtain a lower pH value.

Q. What did you attempt to do with that asphalt emulsion? Did you mix it with any other ingredients?

A. Not at that immediate time. [498]

Q. Did you subsequently attempt to make a stable mixture out of asphalt emulsion and any other ingredients?

A. Yes, I did. I attempted to make stable mixtures of both, of the special Premix emulsion and our regular production emulsion with silica solutions and with special Ruddle Oil.

(Testimony of Grant E. Warren.)

Q. Special Ruddie Oil?

A. Ruddie's Solution, it is called.

Q. Do you know what ingredients were contained in the Ruddie Solution?

A. Yes; they were sodium silicate, sodium fluosilicate and aluminum sulphate, plus water, of course.

Q. Do you recall at this time the percentages of each of those ingredients that you used in making up this so-called Ruddie Solution?

A. Not exactly.

Q. Do you recall approximately when that work was done by you?

A. During the spring and summer of 1938. It extended over a considerable period.

Q. Is that work to which you have referred your work which appears on pages 52 and 57 of your notebook, photostatic copy of which is here in evidence as Defendants' Exhibit FF?

A. Yes, sir, that is right.

Q. Did you make any reports to your superiors on the work done by you in attempting to mix this Ruddie Solution and asphalt emulsion?

A. Yes, two reports were issued on that subject.

Q. Before I show you the report, Mr. Warren, can you tell us what the results of your attempts to make a stable mixture out of using asphalt emulsion and Ruddie's Solution were?

A. I was not successful in making a mixture that I considered satisfactory.

(Testimony of Grant E. Warren.)

Q. I now show you two reports which are here in evidence as Plaintiffs' Exhibits 13 and 14, being respectively Special Report No. R-168, dated June 14, 1938, and Report No. R-175, dated [499] July 26, 1938, and will ask you if these are the reports that you referred to, that you said you made to your superiors.

A. Those are.

Mr. Hackley: Those are Exhibits 13 and 14?

Mr. Aurich: That is right.

Q. Does the Shell Company still manufacture and sell an asphalt emulsion known as the Y-104?

A. Yes.

Q. Have you recently had occasion to make an analysis of Shell's asphalt emulsion Y-104, which it is now selling?

A. Yes, I have.

Q. How does the asphalt emulsion known as the Y-104, now being sold by Shell, compare with the Y-104 that was being sold by Shell, let us say, in 1938?

A. They are substantially the same.

Q. When you made this analysis recently, from what container or place did you get the Y-104?

A. I took a sample from a 55-gallon iron tank that was brought to our laboratory by Mr. Spotswood for special purposes pertaining to this matter.

Q. How recently was this analysis made, Mr. Warren, generally?

A. With about a month.

Q. Approximately how much time did you personally spend in connection with this core oil problem during the time that you worked with it?

A. As a total?

Q. That is right.

(Testimony of Grant E. Warren.)

A. Approximately the equivalent of one month full working time, although it was distributed over [500] several months.

Mr. Aurich: That is all from this witness.

Cross Examination

Mr. Hackley: Q. What do you mean by a degree of Engineering?

A. Stanford University issues a degree of Engineer, which is largely equivalent to a Master of Arts degree, but applied to a special course of study known as engineering chemistry.

Q. What college does that come under?

A. School of Physical Sciences.

Q. Is the precise analysis of the Union Oil emulsion you have referred to that which is indicated at page 15 of the notes Defendants' Exhibit FF which have been offered as part of your testimony?

A. Yes, sir.

Q. Will you read into the record the analysis that you have there? The reason I am asking you to do this is there are a lot of abbreviations that are meaningless to me, at least. Explain what those articles are as you go along.

A. Viscosity — well, the title of the page is "Union Special D Grade Emulsion for Core Oil."

Viscosity 23.8. That viscosity is Saybolt Furol at 77° Fahrenheit, which is a standard test.

Asphalt 60.0. That means percentage of asphalt by weight.

Cement test, O.K. That means, in plain words,

(Testimony of Grant E. Warren.)

that the emulsion can be mixed with dry Portland Cement without coagulation of the asphalt.

Screen 0.0. That is the amount of asphalt retained on passing the emulsion through a 20-mesh screen.

Casein by smell, question. That represents an attempt to determine whether the emulsion contained casein by the odor of the emulsion on heating, the question indicating that it was [501] uncertain.

Stability to 10 per cent calcium chloride, O.K. That means the emulsion in question can be mixed with an equal volume of 10 per cent solution of calcium chloride without coagulation.

10 per cent hydrochloric—HCl, N. G. That means on attempting to make the same test with a 10 per cent solution of hydrochloric acid, the asphalt was coagulated.

Then asphalt test, meaning the asphalt retained on evaporation of the emulsion to dry the water, and after passing the residue through a screen; penetration 70. That is a standard test for consistency of asphalt products.

Ash 0.69 per cent. That is simply non-combustible material.

Ash Analysis 75 per cent insoluble in hydrochloric acid, and in parentheses I have "Trace of magnesium." Other constituents not identified.

Q. That completes it, does it? A. No.

Q. I am sorry.

A. Soluble CS₂ 95.4 per cent. Then I have an item which perhaps demands a little apology to the

(Testimony of Grant E. Warren.)

Court. It includes a bit of slang: "Asphalt crud." which is a local slang for heterogeneous matter.

The Court: Oh, that is not necessary. You do not offend me at all. You have to do more than that to offend me.

The Witness: Tests on that, soluble in carbon disulphide 84 per cent. That is all.

Mr. Hackley: Q. At that time did you make a comparative analysis of the so-called Y-104 asphalt emulsion of Shell?

A. I did not make a special analysis for comparison with this material. However, I had a pretty good knowledge at that time of what the characteristics were.

Q. What, if any, were the variations between the Union asphalt [502] emulsion, which you have reported on here, and Y-104?

A. I did not find any differences of great consequence.

Q. I would like to know what those differences were, if you can remember.

The Court: The testimony is there was no substantial difference.

The Witness: That is right.

Mr. Hackley: I do not know what the witness means by "substantial," your Honor; that is my problem.

The Court: Ask him that.

The Witness: I mean by that no difference greater than the allowable commercial standards for that type of product.

(Testimony of Grant E. Warren.)

Mr. Hackley: Q. The tolerances allowed in commerce on products of this kind?

A. Yes. For example, on such product a viscosity range of 20 to 55 is usually allowed, and it is not considered important what the actual figure is within that limit. Likewise, asphalt content of from 55 to 62½.

Q. What is the viscosity of Y-104, as a rule? It varies, I assume?

A. It varies somewhat, but usually in the 20's.

Q. Not far from the 23.8 referred to here?

A. No.

Q. On either side. What about the asphaltic content? 60 per cent in the Union; what is it in the Shell?

A. It might range anywhere from 58 to 62—62½, possibly. That is the maximum limit.

Q. Again somewhere near this range of 60?

A. Yes.

Q. Mr. Warren, you made an analysis, if I understood you, recently of an asphalt emulsion of the Shell Oil Company likewise called Y-104?

A. Yes.

Q. How did that analysis turn out? What did it show in comparison or contrast, as the case may be, with the analysis you just [503] reported for Y-104 in 1938?

A. Well, I would say there were minor variations in several points. For example, in viscosity, as I remember it, the last sample that I analyzed was an even 20 viscosity.

(Testimony of Grant E. Warren.)

Q. This is the one you are referring to now as having been taken out of a 55-gallon drum?

A. Yes, the viscosity was 20, which happens to be right on the lower limit.

Q. It is right at the limit. What about the asphaltic content?

A. I do not have any notes on the analysis. I can't say positively, but it was within 60, one point either way, 59 to 61.

Q. How long have you been with the Shell Company? A. Approximately eight years.

Q. Ever since you left Stanford?

A. No, I left Stanford in 1929.

Q. Did you work for some other company dealing in asphalt, or was it just some other line?

A. In another line entirely.

Q. Other than your work with the Shell Oil Company, what experience have you had with asphalt products? A. I should say none.

Q. When did you first do any work with reference to attempting to create these stable emulsions of asphalt and such solutions as the one you refer to as the Ruddie Solution?

A. The exact date I don't know, but I would say in the spring of 1938.

Q. Do these notes refresh your recollection on that? You may use them; I have no objection.

A. The first note I find in connection with that matter is April 21, 1938, but I cannot say for certain that that is the first time that I actually worked on it.

(Testimony of Grant E. Warren.)

Q. Over how long a period did you continue your efforts in that [504] direction? And you may refer, if you like, to Exhibits 13 and 14, which I believe are identified by you as reports prepared by you with another.

A. Yes. Well, since the date of the last report is July 26, 1938, I believe that must have been the latest date that I worked on the matter.

Q. It was sometime prior to that date of July 26, 1938, I assume, because you had to prepare the report?

A. That is right.

Q. Had you ever had any experience on that prior to April 21, 1938, or before that date you quoted a moment ago, attempting to prepare stable emulsions of asphalt emulsion and other products?

A. I think not.

Mr. Hackley: That is all.

The Court: Step down. Call your next witness.

ERNEST W. ZUBLIN,

Called for the Defendants; Sworn.

The Clerk: Please state your full name to the Court.

A. Ernest W. Zublin.

Direct Examination

Mr. Aurich: Q. Will you try to keep your voice up for me, Mr. Zublin?

A. I shall.

Q. What is your age?

A. I am forty-four years old.

(Testimony of Ernest W. Zublin.)

Q. You reside where?

A. 2711 Union Street, San Francisco.

Q. What is your occupation?

A. I am a chemical engineer and patent attorney.

Q. Are you a lawyer? A. No.

Q. By whom are you employed?

A. Shell Development Company.

Q. How long have you been employed by that company? A. Close to seven years.

Q. During your work with the Shell Development Company did you [505] ever have anything to do in connection with core oils?

A. Yes, I did.

Q. Do you recall approximately when you first commenced to work on core oil problems?

A. It was in the early part of—in the early spring of 1938.

Q. I now show you a document on a piece of note paper, on the lower right-hand corner of which appears the name J. F. McSwain; above that appears a date stamp April 14, 1938, underneath which are the initials B. G., and I ask you if you can identify that document for me.

A. Yes, I can. This was a note sent up to the patent department. "B. G." stands for Bernard Gratama, who is my superior.

Q. What was the purpose of your receiving this memorandum, if you know?

A. That was for the purpose of looking into the patent situation concerning solutions of this type,

(Testimony of Ernest W. Zublin.)

which were later known to us as Ruddell's Solution.

Q. Do you know from whom you received this memorandum?

A. It came to me through the regular channels after it had been received by the patent department.

Mr. Aurich: I will now ask to have the document identified by the witness marked for identification as Defendants' Exhibit GG for identification only at this time.

(The memorandum referred to was marked Defendants' Exhibit GG for identification.)

Mr. Aurich: Q. What, if anything, did you do in connection with the memorandum Defendants' Exhibit GG?

A. This memorandum, as I recall, went into the files——

Q. Well, let me ask the question this way: Were you to use this memorandum for any purpose in connection with your work, and, if so, what were you supposed to use it for?

A. We were supposed [506] to look into the patent concerning core oils containing this solution.

Q. Was the information contained in Defendants' Exhibit GG for identification sufficient for your purposes?

A. No, it was not quite sufficient.

Q. What did you do after that?

A. We thought that the method of mixing the various ingredients might have an influence on the properties of the resulting solution, and we wanted

(Testimony of Ernest W. Zublin.)

to have further information on just how to proceed to mix those ingredients.

Q. Please continue and tell us just what occurred.

A. Upon my request, Mr. Ruddle came to my office—I do not recall with whom he was at the time—and he gave me the instructions on how to proceed, and I jotted those instructions down on a piece of paper. Later I had those notes typed.

Q. You say Mr. Ruddle showed you how to proceed. He told you how to proceed to do what?

A. How to mix the separate ingredients, whether to put the sodium fluo-silicate in the waterglass—I do not recall the exact procedure at this moment—but there were several possibilities.

Mr. Aurich: For you Honor's benefit, this memorandum that the witness has identified, as our evidence will show, is what Mr. McSwain will testify Mr. Ruddle told him was the formula for making his solution, and that was sent to this man for patent purposes.

Q. I now show you another document dated April 21, 1938 and ask you if you can identify that.

A. Yes; this is a typewritten memorandum of the notes which I had taken and which I just have mentioned before.

Q. When did you get the information on that sheet as to the [507] various ingredients, formulas, and methods of mixing that are contained on the sheet?

(Testimony of Ernest W. Zublin.)

A. These were given to me by Mr. Ruddle personally.

Q. Did Mr. Ruddle tell you what they were when he gave them to you? A. Yes, he did.

Q. And if I understand your testimony correctly, you wrote them down and then subsequently had them typed in the form in which they now appear on this document? A. That is right.

Mr. Aurich: I now offer the document in evidence and ask that it be marked Defendants' Exhibit HH.

(The document referred to was marked Defendants' Exhibit HH in evidence.)

Mr. Aurich: These other formulas, your Honor, two on this sheet and one on the previous memorandum, are the three formulas with which Mr. Dietert worked in performing his experiments.

Q. Just for the purpose of identification, does your handwriting appear anywhere on the exhibit HH? A. Yes, it does.

Q. Will you identify it for us, please?

A. The numbers A 41 11, and the words "Ruddle Solution" are in my handwriting. On the first formula is a bracket which is also mine.

Q. And the A 41 11 is simply your file number?

A. That is the file number, yes.

Q. Oh, I have just one or two questions more I want to ask you, Mr. Zublin. Following the receipt of these formulas from Mr. Ruddle on or about April 21, 1938, you prosecuted or continued the

(Testimony of Ernest W. Zublin.)

prosecution of the Ruddle applications that are mentioned in the contract here in suit?

A. That is correct. [508]

Q. Now, will you just state briefly what you did with respect to prosecuting those applications? Did you prosecute them entirely on your own? Did you counsel or seek the advice of anyone and, if so, whom?

A. When we had to answer a Patent Office action, we wrote an amendment and then submitted a copy to Mr. Roemer, and went to Mr. Ruddle with a request to let us know in due time whether they agreed or disagreed with it. If they did not agree with it—no, if they did agree with it and did not let us know further, we would send it in within a given time to the Patent Office.

Q. What would happen if they did not agree with your proposed amendments?

A. They would let us know. We always gave them at least a month's time to consider it.

Mr. Hackley: I will stipulate, Mr. Aurich, there was no controversy over that subject. I think the cooperation between the patent department of the Shell Oil Company and our office was complete.

Mr. Aurich: Q. Are you a graduate of any university? A. Yes, I am.

Q. Which one and what degrees, if any, do you have?

A. I have the degree of Chemical Engineer of the Swiss Federal Institute of Technology, Zurich, Switzerland.

(Testimony of Ernest W. Zublin.)

Mr. Aurich: No further questions, your Honor.

Corss Examination

Mr. Hackley: Q. Referring to these applications for patent, Mr. Zublin, as I understood the situation, the applications were filed, at least as to Plaintiffs' Exhibits 1 and 2, prior to the time that you and your office commenced prosecution of those cases?

A. That is correct.

Q. And the prosecution was continued by your office? [509]

A. That is correct.

Q. With a cross-check by my office?

A. That is right.

Q. Or by Mr. Roemer in my office?

A. That is correct.

Q. And then as to the application covered by Plaintiff's Exhibit 8—the other two pages I just referred to were Plaintiff's Exhibits 1 and 2, you will note—as to patent Exhibit 8, that specification and the original claims were prepared by your staff, yourself, or someone in connection with you?

A. By myself.

Q. By yourself? A. By myself personally.

Q. Did the Shell Oil Company retain copies of the applications for the patents covering Exhibits 1, 2 and 8 at the time the prosecution of those cases was returned to my office?

A. I believe we did keep copies, as far as it went, as far as we had.

Q. Now, it was the practice, was it not, in your company, and this was what was done in this case,

(Testimony of Ernest W. Zublin.)

copies of the original application and all amendments and Patent Office actions were sent to the head office of the company at the Hague, Netherlands, isn't that correct?

A. That was the regular routine.

Q. And that was done in this case, so far as you know?

A. That was done in this case, yes.

Q. As a matter of fact, you remember when I took your deposition some time back, we went into that? That is right.

Q. Were any foreign applications filed, to your knowledge, on the disclosures of any of these three applications, Exhibits 1, 2 or 8?

A. I am not positive, but I do not believe so.

Q. Were any other applications for patent filed on any core oils other than as shown in Exhibits 1, 2 and 8, either by your company, or directed to core oils and that came to your attention [510] in connection with the arrangements between Peck and Ruddie and Shell?

A. No, I don't think so. The only thing we did file was albino asphalt.

Q. You filed an application on albino asphalt, and that was an application which resulted in the patent to one A. P. Anderson of the Shell Development Company in Emeryville; is that correct?

A. That is right.

Q. Is this a copy of the Anderson patent—and I refer you to a copy of patent No. 2,201,466 that

(Testimony of Ernest W. Zublin.)

was prepared and filed by you and your staff, is that correct? A. That is right.

Q. And prosecuted by your staff?

A. By myself, yes.

Q. That application was filed on January 21, 1938, isn't that correct?

Mr. Aurich: The document speaks for itself. We object to the question on that ground.

A. That is right.

Mr. Hackley: Q. Copies of the application for the Anderson patent, No. 2,201,466, and the amendments and Office actions in connection with that were not transmitted by you at any time during the prosecution of the application, at least, to the office of Townsend & Hackley or to Mr. Roemer, is that correct?

A. No, they were not.

Q. And not to Mr. Peck or Mr. Ruddle?

A. No, they were not.

Q. Any information relating to the Anderson patent was at any time, say up to, oh, the end of the year 1939—— A. No.

Q. So far as you know, not to either Mr. Roemer, Mr. Ruddle, Mr. Peck or anyone in connection with them? A. No, they were not.

Mr. Hackley: I offer as Plaintiff's Exhibit 57 plain copy of Anderson patent No. 2,201,466, filed January 21, 1938, issued May 21, 1940.

(Document marked Plaintiff's Exhibit No. 57 in evidence.) [511]

Mr. Hackley: Q. Mr. Zublin, what did you

(Testimony of Ernest W. Zublin.)

mean when you said the formula illustrated in your exhibit for identification GG was sent to you for patent purposes?

A. Whenever something novel comes up in the matter of technical developments, the patent department is usually informed one way or the other so that we may look into the patent possibilities, and this is just another way of sending information to us, either by note or by formal report.

Q. A search was made upon the subject matter of the disclosure Exhibit GG for identification?

A. Yes, a search was made on that.

Q. Search made only in the patent office, or was it made as well of the publications in the art?

A. There also was a search made of the publications in the art by the library.

Q. Did your Hague office make any search, do you know?

A. That I do not know.

Q. None was reported to you?

A. None was reported to me.

Q. None came to your attention. Was the search made only on the solution comprising water, aluminum sulphate, sodium fluosilicate and sodium silicate mentioned in Exhibit GG for identification?

A. No, it went further than this. We also looked into the art on asphalts and combinations of asphalt with other ingredients—for instance, water-glass.

Q. In other words, you made your search directed not only to the disclosure on Exhibit GG for identification, but also the use of asphalt in cores

(Testimony of Ernest W. Zublin.)

either with or without any of these ingredients or in combination with them? A. Correct.

Q. When was that search completed, if you remember? [512]

A. I don't recall the exact date, but it was sometime in the early spring.

Q. Of 1938? A. Of 1938, yes.

Q. Completed, say, by late June of 1938, wasn't it? A. Probably earlier.

Mr. Hackley: That is all.

Mr. Aurich: No further questions. [513]

W. H. SPIRI,

called for the defendants; sworn.

The Clerk: Q. Please state your full name to the Court.

A. W. H. Spiri.

Direct Examination

Mr. Aurich: For the Court's benefit, I might say that Mr. Spiri is one of the gentlemen who worked on this core oil problem while he was connected with the Shell Company, and he worked on it, as his testimony will show, for about seven or eight months. Necessarily, therefore, his testimony will be a little longer than that of the two previous witnesses, but I am not going into it in any more detail than I can possibly help.

(Testimony of W. H. Spiri.)

The Court: To protect your record; there is no necessity of going into it in minute detail.

Mr. Aurich: That is correct, your Honor.

Q. Will you state your age, please?

A. Thirty-six years of age.

Q. And your occupation?

A. Industrial salesman.

Q. Where do you live?

A. At 50 Oakwood Avenue, San Anselmo, California.

Q. By whom are you now employed?

A. By the Tidewater Associated Oil Company.

Q. How long have you been employed by that concern?

A. Since September 8, 1941.

Q. You were formerly employed by the Shell Development Company, one of the defendants in this case?

A. I was.

Q. Roughly, during what period of time were you so employed?

A. I was employed at the Shell Development Company from August, 1938, until August, 1940.

[514]

Q. What were your duties while you were so employed by the Shell Development Company?

A. I was a mechanical engineer in charge of development and general engineering work, and field work.

Q. What are your educational qualifications as an engineer?

A. I have four years of apprenticeship as a

(Testimony of W. H. Spiri.)

mechanic and four years' college, graduating as a mechanical engineer.

Q. Of what college are you a graduate?

A. State College in Switzerland.

Q. During your college work did you have any experience in foundry practice?

A. Not during my college days, but during my days of apprenticeship.

Q. Was that before you went to college?

A. That is right.

Q. How much time did you spend in a foundry during your apprenticeship days?

A. I would say at least eight months.

Q. When did you graduate from this college?

A. In 1928.

Q. Between the time of your graduation from the State College in Switzerland in 1928 and the time you entered the employ of the Shell Development Company, what experience, if any, did you have in a foundry?

A. During my employment with the Byron Jackson Pump Company in Berkeley, California, particularly during the time I spent in their engineering department, I had a continuous contact with their foundry supplier, which is the H. C. Macauley Foundry Company, and their pattern shop. As a matter of fact, I made most of their pattern drawings, and had an everyday contact with that foundry for at least two years.

Q. During that experience did you become familiar with the art of coremaking generally?

(Testimony of W. H. Spiri.)

A. I became familiar with the art of coremaking during my apprenticeship, and added considerable to my knowledge during that time and experience.

Q. While you were employed by the Shell Development Company did you [515] have any occasion to do any work in connection with core oils?

A. Yes, I did.

Q. Without referring to any memoranda now, can you tell us approximately when you commenced to do work on core oils for the Shell Development Company?

A. Without looking at my notes, I would say I started in the middle of November, 1938.

Q. And when did that work cease with the Shell Development Company?

A. I terminated the experiments between July and August of 1939.

Q. Now, while you were doing this work on core oils from November of 1938 until July or August of 1939, did you keep a record of work done by you, tests performed, observations that you made, et cetera?

A. Yes, I certainly did.

Q. I show you a group of notes in a folder, entitled "Core-Min-Oil Notes, No. 1, W. H. Spiri," and ask you if that is one of the volumes of notes that were kept by you?

A. Yes, this is one of my notebooks.

Mr. Aurich: Q. Are all the notes in this notebook or folder marked No. 1 in your own handwriting?

(Testimony of W. H. Spiri.)

A. With the exception of one or two pages, all are my own handwriting.

Mr. Aurich: I offer the folder of notes identified by the witness and ask that they be received in evidence and marked Defendants' Exhibit II.

(The folder referred to was marked Defendants' Exhibit II in evidence.)

Mr. Aurich: Q. I now show you two additional folders, the first of which is marked, "Core-Min-Oil Notes, No. 2, W. H. Spiri," and the second, "Core-Min-Oil Tests No. 3, W. H. Spiri," and ask [516] you if these are notes made by you in the course of your work on core oils and whether or not substantially all of the notes contained therein are in your own handwriting?

A. These are my notes, and substantially all the pages are in my own handwriting.

Mr. Aurich: I offer in evidence as Defendants' Exhibit JJ the folder of notes identified by the witness and marked, "Core-Min-Oil Notes, No. 2."

(The folder referred to was marked Defendants' Exhibit JJ in evidence.)

Mr. Aurich: As Defendants' Exhibit KK, I offer in evidence the folder of notes identified by the witness and marked, "Core-Min-Oil Tests, No. 3."

(The folder referred to was marked Defendants' Exhibit KK in evidence.)

Mr. Aurich: Q. I now hand you a notebook with the name "W. H. Spiri" appearing on the

(Testimony of W. H. Spiri.)

outside, and ask if you can identify that notebook, and if so, tell us what it is, briefly?

A. This notebook is a standard laboratory notebook kept at the Shell Development's Emeryville laboratory, and all the pages filled herein are in my own handwriting.

Mr. Aurich: I offer the notebook just identified by the witness, in evidence, and ask that it be marked Defendants' Exhibit LL.

(The notebook referred to was marked Defendants' Exhibit LL in evidence.)

Mr. Aurich: Q. I now hand you two more folders, the first of which is marked "Core-Min-Oil, Vulcan Foundry Tests, 1938-1939, W. H. Spiri," and ask you to tell the Court what is contained in that folder?

A. This folder contains the day-to-day foundry [517] reports, noting down all the tests which were made at the Vulcan Foundry at East Oakland.

Q. And likewise are all the notes in that folder marked "Core-Min-Oil, Vulcan Foundry Tests," in your own handwriting? A. Yes, they are.

Mr. Aurich: I offer in evidence as Defendants' Exhibit MM the folder of Vulcan Foundry reports which the witness has just identified.

(The folder referred to was marked Defendants' Exhibit MM in evidence.)

Mr. Aurich: I might say to your Honor that that last exhibit and the next exhibit that I have to offer are on a mimeographed form which was pre-

(Testimony of W. H. Spiri.)

pared by this witness, setting forth the places for the various data.

Q. The next folder I hand you is identified as "Core-Min-Oil Tests, Berkeley Brass Foundry Company, Berkeley, Cal., May, 1939." Will you please tell the Court what that is?

A. This folder contains notes, as well as day-to-day foundry reports of tests made at the Berkeley Brass Foundry Company in Berkeley, California.

Q. Those notes are in your own handwriting?

A. They are.

Mr. Aurich: I offer in evidence as Defendants' Exhibit NN the folder containing the notes identified by the witness, being work done at the Berkeley Brass Foundry.

(The folder referred to was marked Defendants' Exhibit NN in evidence.)

Mr. Aurich: Q. I am now going to hand you some various reports in typewriting, Mr. Spiri. I think you have seen them all before. Will you just glance at them hastily and tell the Court generally what they are?

A. These reports are mainly letters to my superiors, the Shell Development Company and Shell Oil [518] Company, giving the high spots at various intervals, of the procedures and the major tests made, and the major results obtained during the time I worked with Core-Min-Oil.

Q. I notice that the first of the group of reports that I just handed you is undated. I now show you

(Testimony of W. H. Spiri.)

a letter dated December 1, 1938, which has a signature at the end thereof, and I will ask you if that is your signature, and if you can fix the approximate date of the first report by means of that letter?

A. This is my signature, and this letter dated December 1st of 1938, and the report attached to it is the first report, and was very probably written during the latter part of November.

Q. 1938? A. 1938.

Mr. Aurich: I will now offer in evidence as Defendants' Exhibit OO, the first report identified by the witness, being an undated report.

(The report referred to was marked Defendants' Exhibit OO in evidence.)

Mr. Aurich: As Defendants' Exhibit PP I offer in evidence the letter dated December 1, 1938, which has been identified by the witness. This letter, I might add, is offered solely and only for the purpose of fixing the date of the first report.

(The letter referred to was marked Defendants' Exhibit PP in evidence.)

Mr. Aurich: As Defendants' Exhibit QQ I will next offer in evidence the report by this witness dated January 24, 1939.

(The report referred to was marked Defendants' Exhibit QQ in evidence.)

Mr. Aurich: As Defendants' Exhibit RR I offer in evidence the report of this witness dated February 7, 1939.

(Testimony of W. H. Spiri.)

(The report referred to was marked Defendants' Exhibit RR in [519] evidence.)

Mr. Aurich: As Defendants' Exhibit SS I offer in evidence the report of this witness dated March 1, 1939.

(The report referred to was marked Defendants' Exhibit SS in evidence.)

Mr. Aurich: As Defendants' Exhibit TT I offer in evidence this witness' report dated March 24, 1939.

(The report referred to was marked Defendants' Exhibit TT in evidence.)

Mr. Aurich: As Defendants' Exhibit UU I offer in evidence this witness' report dated April 14, 1939.

(The report referred to was marked Defendants' Exhibit UU in evidence.)

Mr. Aurich: As Defendants' Exhibit VV I offer in evidence this witness' report dated April 27, 1939.

(The report referred to was marked Defendants' Exhibit VV in evidence.)

Mr. Aurich: As Defendants' Exhibit WW I offer in evidence this witness' report dated May 24, 1939.

(The report referred to was marked Defendants' Exhibit WW in evidence.)

Mr. Aurich: And as Defendants' Exhibit XX

(Testimony of W. H. Spiri.)

I offer in evidence this witness' report dated June 6, 1939.

(The report referred to was marked Defendants' Exhibit XX in evidence.)

Mr. Aurich: Q. You made one other report, Mr. Spiri, in addition to those I have just offered in evidence?

A. Yes, I did. [520]

Mr. Aurich: Q. I will show you a document which has heretofore been identified in this cause as Plaintiffs' Exhibit 23. Did you prepare that report?

A. Yes, I did.

Q. That report was prepared in collaboration with Mr. Spotswood? A. That is correct.

Q. The report, Plaintiffs' Exhibit 23, was your concluding report on all the work done by you in core oils? A. That is correct.

Q. I take it we have now before the Court all of the written matter prepared by you concerning your work on core oils, which includes your notes, your foundry reports, your book, and your type-written reports to your superiors?

A. That is correct.

Q. In what foundries did you work with Core-Min-Oil?

A. I worked mainly at the Vulcan Foundry Company in East Oakland, and made additional tests at the Berkeley Brass Foundry Company in

(Testimony of W. H. Spiri.)

Berkeley, California, and at the Axelson Machine Company of Los Angeles. [521]

Q. I neglected to ask you this before: These foundry reports are dated, and I notice that in your notebook and in your other reports there are dates. I assume that the entries appearing opposite those dates were made on or about the date they bear.

A. Usually on the day the tests or reports were made.

Q. Now, during this period of time that you state you worked with core oil while with the Shell Development Company, how much time did you spend, actually, on that work?

A. With the exception of a very few days, I spent my entire time on this problem.

Q. Did you do any work in connection with core oils prior to November 17, 1938?

A. I did not.

Q. Did you do anything in connection with core oils prior to that date?

A. I discussed the core oil problem with the officials of the Shell Oil Company and Shell Development Company, and I also made it a point to familiarize myself again with the approved art of coremaking, and got acquainted with what kind of equipment was being used in present-day foundries.

Q. In connection with that work, did you visit any foundries around the Bay area, or elsewhere?

A. Yes, I did visit several foundries around the Bay area.

(Testimony of W. H. Spiri.)

Q. There is a list of those foundries in your notebook, is there? A. That is right.

Q. Will you look at your first notebook, please, page 60—that is Defendants' Exhibit II—and using that to refresh your recollection, state what foundries that you visited when making your investigation?

A. In making my investigation I visited the American Manganese Steel Company, the Apex Bronze Foundry, the Berkeley Brass, General Metals, The Pacific Foundry, the Vulcan Foundry, and H. C. Macauley Foundry Company. [522]

Q. I notice on that page 60, Mr. Spiri, you also have listed Columbia Steel.

A. Well, the Columbia Steel, as well as the Pacific Steel Casting Company, which is also listed on this page, were not visited.

Q. Approximately how much time did you spend in making this investigation and visiting these various foundries?

A. I would say about between four to six weeks prior to actually entering my work.

Q. What type of oil do you recall was being used by these various foundries generally?

A. Generally, Linoil, linseed oil, Houghton Oil, and Quandt Oil.

Q. As a result of these investigations and study which you made of these foundries, did you arrive at any opinion as to the requirements of a core oil for foundry use?

A. Yes, I certainly did.

(Testimony of W. H. Spiri.)

Q. Are the requirements for a core oil set forth in your notes? A. Yes, they are. [523]

Q. Now, outside of core oils, what other study of coremaking was investigated by you prior to the time that you actually engaged in the work of making cores?

A. Well, I studied current foundry publications, such as *The Foundry*, which is a journal, and investigated the types of ovens used, the modern art of coremaking, the time of baking, and so forth.

Q. What type of ovens did you find in use in foundries that you have referred to and that you have visited, direct-fired or indirect-fired?

A. All the foundries that I have visited personally had direct-fired ovens, with the exception of the Axelson Machine Company, which had a semi-indirect-fired oven, by which I mean that the fire-box was outside of the oven and the flue gases were circulated through the oven.

Q. In so far as the gases of combustion were concerned, the Alexson Foundry oven would be a direct-fired oven? A. Yes, sir.

Q. Now, just briefly and generally, what did you do following your studies and preparing to work on this problem?

A. I prepared all the necessary equipment and got in touch with the Vulcan Foundry & Machine Company, who were selected to assist us or give us space and time and core-makers to carry out this work.

Q. What work were you going to carry out?

(Testimony of W. H. Spiri.)

A. I was going to make tests at the foundry right alongside with the regular coremaking of that particular foundry.

Q. Do you know when you actually commenced to do this work in the [524] Vulcan Foundry?

A. I commenced working at the Vulcan Foundry approximately in the middle of December of 1938.

Q. Prior to that time had you had any personal knowledge of any of the experiments carried on, tests performed, or results obtained by Shell in connection with their work on core oils?

A. I had not.

Q. Had you any personal knowledge as to whether or not, prior to December, 1938, the Shell Oil Company, or the Shell Development Company, had been able to make a stable mix or Core-Min-Oil?

A. I had no such knowledge.

Q. Did you ever have any understanding as to the ingredients that made up Core-Min-Oil?

A. By verbal understanding.

Q. What was that, please?

A. Pardon me?

Q. What was that understanding? What understanding did you have as to what Core-Min-Oil was composed of?

A. Well, I had none.

Q. Well, did anybody tell you what was in it?

A. Verbally, I was told,—

Q. Well, tell us what you knew about it, or what you were told, please.

The Court: Q. By whom?

A. I was told by Mr. Spotswood that the Core-

(Testimony of W. H. Spiri.)

Min-Oil contained an asphalt emulsion and a solution of sodium silicate and some chemical ingredients.

Mr. Aurich: Q. You are not a chemist?

A. No, I am not.

Q. Prior to the rendering of your first report, Defendants' Exhibit OO, had you made any cores at the Vulcan Foundry, or performed any experiments at that place? A. I had not.

Q. Prior to the rendering of your first report, Defendants' Exhibit [525] OO, had you made any cores with the so-called Ruddell Solution, or Core-Min-Oil, while you were employed with Shell?

A. No, sir, I had not.

Q. When did you actually commence work in the Vulcan Foundry—and I ask you that in connection with your notes, and will ask you to turn to pages 57 to 35 of your first notebook, Defendants' Exhibit II?

(To the Court): I was going to tell the Court that these books, these notes that the witness has, run backwards; that is, the earliest date is way in the back of the book, and the latest date is at the front.

The Court: Maybe I can be helpful here.

Mr. Aurich: Yes, your Honor.

The Court: Q. Now, you have indicated generally what you did, and the period of time in which you did it, and the facts and circumstances, and the reports, are here. A. Yes.

Q. As a result of your work and your examina-

(Testimony of W. H. Spiri.)

tion, tell us what you did yourself, aside from your notes or anything.

A. Well, I investigated—before I started making the actual tests at the Vulcan Foundry I investigated the type of oven they had, their way of making cores, because I knew I had to make cores under similar circumstances, under similar conditions, and also the same core-makers they use in making their regular cores every day. I set up an oven at the Vulcan Foundry, which was brought in from the Martinez Refinery, and I got all the tools together and made a few cores to practice, in order to be able, when we would get ready for making the tests which we intended to make, we would know what we were doing. I also investigated the type of sand-mixing used out there, drying the core sand, and so forth.

Does that answer your question? [526]

Q. All right, then, what did you do? These were things you did. Now tell us what was the result of them; what happened?

Mr. Aurich: I think the Court is interested in having you describe in some detail just what you did.

The Court: Q. What you did, and as a result of what you did, what is your opinion?

A. I had core oil prepared.

Q. What core oil?

A. Core-Min-Oil, prepared at the Emeryville laboratories of the Shell Development Company, and I picked that Core-Min-Oil up in the morning before I went to the foundry. Then I mixed the Core-Min-

(Testimony of W. H. Spiri.)

Oil with the sand in the various proportions, and I tested the workability, that is, how it flowed in the core box, in the drag; how it kneaded with the cope; how it reacted in the oven the Vulcan Foundry had, and how it reacted in the indirect-fired gas oven which I had brought down from Martinez.

I also compared it, as far as strength of the core was concerned, with the linseed oil cores made by the Vulcan Foundry, and found that the strength was considerably lower—as a matter of fact, in most cases unsatisfactory for making castings. Most cores which were used to make castings had to be handled with kid gloves and had to be put in a mold very carefully.

I also, during my experiments, stored a number of cores away alongside of other cores, linseed-made cores, to see if the cores would stand the storage and the handling as the linseed oil cores did, but they did not.

That is briefly stating the prior work in the actual tests.

Mr. Aurich: Q. Well, you also did some work at Axelson Foundry. You might go on and tell the Court, in your own way, what you did at Axelson, what oils you worked with down there, and what the results were, and just like that. [527]

A. The Emeryville laboratory prepared a great number of these Core-Min-Oils, and the one we considered best, as to mixability and strength and friability, we took to a foundry which was not acquainted with Core-Min-Oil at all. That was the

(Testimony of W. H. Spiri.)

Axelson Machine Foundry in Los Angeles. The Shell Development Company prepared five cans of Core-Min-Oil, three of which contained a black Core-Min-Oil, and two of which contained a light oil.

On my arrival in Los Angeles I found two of the black oils were so jelled, we could not shake them out of the can. Those could not be used for mixing with the sand at all. One of the cans containing black oil was mixed with sand. Cores were made by the core-makers of Axelson's; a few cores were made by myself. And the cores were put in their semi-direct-fired oven.

The result was that the cores crumbled; they had no strength after baking. Of course, the cores were simple cores, just cylindrical type of cores. In order to give the Core-Min-Oil a very good chance, I saw that the Axelson Foundry foreman was very much interested in our product. He told me I could use their electric-heated furnace and make some cores in there, so as to get away from possible attack of the flue gases, and this opportunity was taken up, and I made cores and put them in the electric furnace. I baked them with the same baking time for that particular size of core as I had experienced at the Vulcan Foundry. I found that the cores were not strong enough, and they were not approved. None of them was approved for making any castings, because the superintendent of the foundry simply said they were not strong enough. He would not consider them for making castings.

Mr. Aurich: Does that answer your Honor's

(Testimony of W. H. Spiri.)

question? I might say that the foundry reports this witness prepared do not show the exact type of oil that was being used. It would be prepared at [528] Emeryville. And I am going to present proof, part of which goes in now, and some later, as to exactly what was used.

Q. I hand you a folder, that I will ask to have marked Defendants' Exhibit YY for identification, containing numerous formulas. You have seen that document before?

A. Yes, I have seen this document.

Q. You have examined it?

A. I have examined it.

(The folder referred to was marked Defendants' Exhibit YY for identification.)

Mr. Aurich: Q. I notice that in your foundry report you have a place to indicate the formula used by you, and on some occasions the formula is not sufficiently identified, so that one looking at the report could tell exactly what core oils you were using; and I also understand further, on a great many of these occasions, you had no personal knowledge of the actual ingredients, or percentages of each, that were contained in these various core oils, is that correct? A. That is correct.

Q. Are there any instances in your foundry report where you used a core oil that was prepared by you?

A. Yes, sir; several instances.

Q. Have you, at my request, prepared a list of

(Testimony of W. H. Spiri.)

those instances for me, so that we can identify them?

A. All I have is the page number.

Q. And the test number?

A. The test number.

Q. Now, if I understand you correctly, you are going to now tell us the tests that you made, by referring to Defendants' Exhibit NN and MM, the core oils that you used?

A. That is correct.

Q. Will you read those test numbers into the record, please?

A. These test numbers are Test No. 19, 22, 24, 58 to 71, 74, 76, 80, 83, 84, 87, 90 to 93 inclusive.

[529]

Q. Did you mention 20 and 21? A. No sir.

Q. Will you look at your Tests Nos. 20 and 21 in Defendants' Exhibit MM, and see if that should not be included in that list?

A. This should be included in the list, although it was not a prepared core oil by myself. It was a mixture of two core oils.

Q. That you mixed together at the foundry?

A. That is right.

Q. In other instances, as indicated by your foundry tests, you would add various materials to the core sand as you would mix it with the core oil, is that right? A. Yes, sir, I did.

Q. And those instances are recorded on your foundry reports as indicated in Defendants' Exhibit MM and NN? A. Yes, they are.

Q. And in all other instances the formulas, or

(Testimony of W. H. Spiri.)

rather, the core oils that you received from Doctor Wright were mixed with the sand without any additions by you, is that correct?

A. That is correct.

Mr. Aurich: For the Court's benefit, I might say those instances in which this witness used the core oils that he knew of at the foundry, the foundry reports speak for themselves as to what was contained therein, and I will not detail that.

Q. Now, the Court asked you one question that you have not answered yet, Mr. Spiri, and that was to state what conclusion you arrived at with respect to these core oils with which you worked, as to its workability, its use in practical commercial foundry operations.

Mr. Hackley: I object to that, your Honor, on the ground that the witness has not been qualified as an expert.

The Court: It is the result of his experiments, as a result of the work that he has enumerated here, and as a result of his reports. I will allow him to answer the question. [530]

A. Thank you. As a result of my tests and experiments I made with these Core-Min-Oils I found—and the tests will bear me out—that all the core oils prepared, containing sodium silicate solution, could not be baked in a direct-fired oven. It was necessary, as a matter of fact, even at the time of testing it at the Vulcan Foundry, to get an indirect-fired oven.

Furthermore, the strength of the cores was never

(Testimony of W. H. Spiri.)

sufficient, if the friability was considered fair, or if the friability was bad, that is, it was necessary to use a tool to get the core out of the casting, the strength was considered acceptable by the foundry foreman to make a core and make a casting with that particular core.

Furthermore, all the cores had to be selected, and out of a great number of cores which were made, the total including—all the tests alone made at the Vulcan Foundry contained some 770 cores, of which only about 470 were approved for making castings, and only about half of that were actually cast, which shows a loss of about 61 percent, which in my personal opinion, as well as the opinion of the foundry foreman, is not allowable.

Mr. Hackley: I object to the opinion of the foreman as hearsay.

Mr. Aurich: That may go out.

The Court: That may go out.

A. (Continuing): The cores also were subject to water absorption. In other words, they could not be stored. We only made tests in storing the cores alongside the linseed-baked cores. But one of the severe tests, as I understand it, is to place the core in the mold, and since many foundries wait until pouring day, until they have a run or have heat, they have to have the cores laying in a wet mold, where it is subject to water absorption. [531]

It was also observed that the core sand mixed with this Core-Min-Oil was sticking to the core boxes.

(Testimony of W. H. Spiri.)

It was therefore necessary to dust the core boxes almost immediately after one core was made, with lycopodium, or wash out the core boxes with kerosene, dry it, and then dust it. It was also observed in many of these prepared core oils made by the Emeryville laboratory that pellets were formed when the core sand was mixed with the core oil; that is, the core oil did not thoroughly and evenly mix with the sand. It formed pellets, and the rest of the sand did not get any core oil at all, which would be commercially a very bad point.

Furthermore, it was necessary, in order to be able to do any coremaking, to prepare the core immediately the sand had been mixed, because the sand was crusting over almost immediately after preparing it.

Mr. Aurich: Q. Let me interrupt you a minute, Mr. Spiri. Perhaps I can shorten it this way: All the conclusions that you arrived at as a result of your working with these core oils, from November, 1938, to July or August, 1939, are set forth in your reports, are they? A. That is correct.

Q. And particularly your report of August 7, 1939, Plaintiffs' Exhibit 23?

A. That contains all these results.

Q. I just have one more question, now: During this time you were working with this core oil, you used a core oil that has been identified in various ways as being in an emulsified state, or a stable

(Testimony of W. H. Spiri.)

mixture, or a ready-to-use core oil, is that right?

A. That is right.

Q. And a great many of your experiments, however, were with a core oil wherein you mixed the two ingredients separately with the sand?

A. That was done. [532]

Cross Examination

Mr. Hackley: Q. I understand you are at present employed by the Tidewater Associated Oil Company? A. That is correct.

Q. Where, Mr. Spiri? A. In Sacramento.

Q. In what capacity?

A. As an industrial salesman.

Q. Working out of the main office in Sacramento? A. Yes, sir; district office.

Q. And you are on leave to testify here, I assume? A. Pardon me?

Q. You are on leave to testify here?

A. That is right.

Q. Did you go directly from the Shell Oil Company to the Tidewater Associated Oil Company?

A. No, I did not. I did some other work in the meantime.

Q. What was the nature of that other work?

A. Surveying for the Marin Municipal Water District, and general engineering work, and I did trial work for the United States Navy.

Q. What is your present home address?

A. 50 Oakwood Avenue, San Anselmo, California.

(Testimony of W. H. Spiri.)

Q. Now, in all of these tests that you have reported here, did you, if you know, at any time use a product comprising asphalt emulsion as one part, and a solution comprising sodium silicate, sodium fluosilicate, aluminum sulphate and water, as the other part, and mix the two parts separately with the sand, for the purpose of [533] making a core?

A. No, I did not, not to my knowledge.

Q. You did your work with products which were in the so-called one-package class, as they have been referred to in this Core-Min-Oil work, isn't that right?

A. That is correct.

Q. The product you took to the Axelson Foundry, or the products—I think you said there were five cans?

A. That is right.

Q. Were all supposedly one-package core oils?

A. That is right.

Q. Ready for use?

A. That is right; ready-for-use core oil.

Q. I believe you testified that the products were affected in the work at the Axelson Foundry by the gases of combustion in the Axelson ovens, is that correct?

A. That is correct, yes, sir.

Q. Did you, in your work, either at the time you commenced the work, or at any time during it, with Core-Min-Oil, have reference to the technical reports, 79 and 90, of your company, or of the Shell Oil Company? I will show you what I mean by those reports.

(Testimony of W. H. Spiri.)

A. May I see those reports, please?

Q. Yes; just a moment, please. First I show you Exhibit 3, which is TAC 79, dated February 24, 1938. Can you answer the question as to that report, Mr. Spiri?

A. I have seen this report.

Q. When did you first see that report, do you remember?

A. As I recollect it, during the late December, 1938.

Q. About at the time you started your work, is that correct?

A. That is right. I just simply read this report.

Q. What was the date that you went to the Axelson Foundry?

A. Without looking at my records, I went to the Axelson Foundry—

Q. That is, approximately.

A. Yes—I believe in May of 1939.

Q. That would be within a month, one way or the other, of that time, at least, wouldn't it?

A. That is right; that is correct. [534]

Q. At the time you went to the Axelson Foundry you knew, did you not, that Core-Min-Oil had been determined as being useful only if care was taken to exclude CO₂ when drying in gas ovens?

A. By the time I went to Axelson I knew that.

Q. You knew it before you went to Axelson?

A. That is right.

Q. Why did you go down there and make tests

(Testimony of W. H. Spiri.)

of Core-Min-Oil in ovens containing CO₂ gases if you knew they could only be a failure?

A. When I was in Los Angeles, I contacted the Axelson Machine Company and asked them, without personally investigating the oven, what sort of an oven they had. They said an indirect-fired oven. However, when I got there—I had my core oil along with me—and personally inspected the oven, I found that by indirect they only meant that the firing chamber was outside the oven, and called that an indirect oven.

Q. But, in fact, the gases of combustion went through——

A. The gases of combustion went through and therefore there is no difference between this type of a firing chamber and a firing chamber directly in the oven. That is the reason I used, afterwards, an electric oven.

Q. At the time you started your work did you at any time see the report, TAC 90, dated March 22, 1938, which I show you?

A. I am not sure if I have seen this report. I don't recollect.

Q. Do you have the formula for the so-called light products that you used at the Axelson Foundry? You say there were three gallons of black and three gallons of light-colored core oils?

A. Yes.

Q. Do you have the formula for the light-colored products?

A. In my reports, without looking at them, I re-

(Testimony of W. H. Spiri.)

collect that the light product contained an albino asphalt emulsion and linseed oil.

Q. That is as you remember it?

A. That is as I remember [535] it without looking at any records.

Q. Would you refer to your notes on those products? Indicate for the record where your notes are for the work done on the two light-colored products? A. Yes.

Q. Will you refer to your notes please?

A. I would have to have the report in which I reported to my superior on the work done at the Axelson Foundry, which is one of the typewritten reports.

The Court: Probably counsel knows where it is.

Mr. Hackley: Do you happen to know which exhibit number that is, particularly?

Mr. Aurich: I think probably it is Defendants' Exhibit VV. I have a copy here that you can use, if you haven't the original? [536]

Mr. Hackley: I have it right here. I will show the witness the report Exhibit ZZ.

Q. Is that the one you refer to?

A. Yes, sir.

Q. Was the report ZZ written following your trip to the Axelson Foundry?

A. That is correct.

Q. Can you state what was meant by the reference to a carbon black Core-Min-Oil—and I refer you to cores 4, 5 and 6 on page 2 of Exhibit VV.

Mr. Aurich: Mr. Hackley, I do not want to in-

(Testimony of W. H. Spiri.)

interrupt your cross examination of this witness, but I am informed that this witness has no personal knowledge of the formulas, and I have a man here who does, and who will be a witness.

Mr. Hackley: I just want to find out what this witness knows about what he has called a carbon black Core-Min-Oil.

The Witness: The Core-Min-Oil contained in cans 4, 5 and 6, as stated here, contained carbon black, and that is all I knew about it.

Mr. Hackley: Q. Is it your testimony that all of your work at the Axelson Foundry was a failure? A. Yes, it is.

Q. Would you describe, referring to the report Exhibit VV, what you found with reference to the albino asphalt-linseed oil cores.

A. The asphalt—quoting from my report—the cores were found to be equally strong compared with the ones made with the linseed oil used by the Axelson Machine Company, and could be used for castings. As a matter of fact, the Axelson Machine Company very favorably commented on this light color.

Q. You said that you made a study of a wide variety of publications in the foundry art at the time you undertook your work?

A. That is correct.

Q. Do you have a list of that reference material in your notes [537] anywhere?

A. I have, if I may look at my—I made an in-

(Testimony of W. H. Spiri.)

dex, which you may examine, just to show where I can easily find——

Q. That is an index of your own notes?

A. That is right. Would you care to look at it? It just shows where I can find the various things.

Mr. Hackley: Mr. Aurich, it occurs to me it might be helpful if we had that index in the record. It seems to be exactly an index of the voluminous exhibits of the witness.

Mr. Aurich: I don't want it in evidence. It is of no value to me. It may be of value to the witness.

The Witness: I have notes to that effect on page 80 and 82 in my notebook No. 1, page 85, notes on foundries around the Bay Area on page 90 and 92, and I have a few notes on Quandt Oil on page 93. Recommendations of various oils for desirable properties of core oil is on page 97. Suggested formulas also for core oils, 99 to 102, and the notes from the articles, referring particularly to the oven type, is on page 103 to 117. These are general notes. Most notes were made on oven design and general foundry practice.

Q. You refer to the termination of your experiments in July or August 1939. Did you terminate those on the orders of someone, or simply because you had completed your work?

A. I terminated those on the order of my superior.

Q. Who was that?

(Testimony of W. H. Spiri.)

A. Well, at that time Mr. McSwain.

Q. Mr. McSwain told you what?

A. Mr. McSwain told me to cease working on this problem.

Q. And you discontinued your work then and there?

A. That is correct. I informed my own superior to that effect.

Q. You work at the Shell Company, do you not?

[538]

A. That is correct.

Mr. Aurich: Did.

Mr. Hackley: Did; I am sorry, Mr. Aurich. I did not mean to mislead the witness.

Q. Mr. McSwain is with the Shell Oil Company, Incorporated?

A. That is right.

Q. But you took your orders from Mr. McSwain on core oil?

A. Yes, I was loaned by Shell Development to the Shell Oil Company.

Q. You referred to the making of 770 cores in the course of your work; is that correct?

A. That is correct.

Q. That is the total number of cores that you made, roughly?

A. At the Vulcan Foundry.

Q. Eight months?

A. That is only at the Vulcan Foundry.

Q. I see. And all of those 770 cores were baked, were they?

A. Those were baked, yes, sir.

(Testimony of W. H. Spiri.)

Q. And all those 470 were pronounced by yourself to be satisfactory.

A. Not by myself. The 470 were accepted for castings by the foundry foreman.

Q. There were 300, then, that were unsatisfactory, is that correct? A. That is right.

Q. What kind of ovens were those 770 cores baked in?

A. In an indirect-fired gas oven.

Q. All of them? A. All of them.

Q. What do you refer to as an indirect-fired gas oven?

A. That is a completely insulated, asbestos insulated gas oven, where no flue gases of any kind can enter the oven box in which the cores are being baked. In other words, the flame is on the outside of this enclosed box and the flue gases pass through a chimney on the outside. [539]

Q. When you refer to an indirect-fired oven, that is the type of oven you mean, if I understand you, is that correct?

The Witness: May I have that question again?

(Question read.)

A. That is correct, or an electric-fired oven.

Mr. Hackley: Q. And electric-fired oven is likewise indirect in that the gases of combustion—

A. No. CO₂ gases within the baking room of the—

Q. Did you make any distinction between the

(Testimony of W. H. Spiri.)

cores you made in the indirect-fired oven and cores which you may have made in an electric oven?

A. I only baked standard 1 x 1 x 8 cores in electric-fired oven at the Emeryville laboratories and a few cores which I made in the electric-fired heat-treating foundry at the Axelson Machine Company.

Q. What percentage of cores, if any, in the electric oven were pronounced satisfactory?

A. None were pronounced satisfactory made with Core-Min-Oil.

Q. Even in the electric oven?

A. Even in the electric oven. They were below the strength which the Axelson Machine Company requires for its castings.

Q. So you had better results in the indirect-fired oven than you did in the electric oven, if I understand you, is that correct?

A. No, the results were the same, because as far as the oven construction is concerned, using electricity or using gas has nothing to do with a totally enclosed box where no gases come to the core.

Mr. Hackley: That is all.

Mr. Aurich: Just one question on redirect, your Honor. [540]

Redirect Examination

Mr. Aurich: Q. How did the baking time of cores made with this albino linseed oil that you have referred to compare with the baking time of cores made with the regular linseed oil that

(Testimony of W. H. Spiri.)

the Axelson Foundry was using in their commercial operations?

A. The baking time was a little longer by using albino linseed than it was for linseed oil.

Mr. Aurich: No further questions.

The Court: Step down.

WILLIAM L. EVERSON,

called for the defendants; sworn.

The Clerk: What is your name?

A. William L. Everson.

Mr. Aurich: This witness, your Honor, is being called out of order, and the pertinency of his testimony will not be apparent from it, so I might state briefly, in the course of work with this Core-Min-Oil, and to develop a certain test, the Shell Development Company had Emeryville prepare seven cans of various solutions to be used as a core oil. Those were then given to some other individuals, like Mr. Spotswood, who took them to the Vulcan Foundry, made cores with them, and then wrote a report. These men who actually did the work at the foundry had no knowledge of what was in the emulsions, and this witness on the stand is going to tell us that now.

Direct Examination

Mr. Aurich: Q. Will you give us your age, please, Mr. Everson.

A. Thirty-three.

(Testimony of William L. Everson.)

Q. And your residence?

A. 3070 Pleitner Avenue, Oakland.

Q. And your occupation?

A. Analytical chemist.

Q. You are employed by the Shell Development Company in that [541] capacity?

A. That is right.

Q. For how long a period of time have you been employed as an analytical chemist for the Shell Development Company?

A. For about four and one-half years.

Q. Are you a graduate of any university and, if so, will you tell us what university and what degree you hold?

A. I have a B.S. in Chemistry from the University of California?

Q. While you were employed by the Shell Development Company did you do any work on core oils?

A. Yes, I did.

Q. When was that work done by you?

A. That was done in the spring or summer of 1938.

Q. And you kept a record of the work you did at that time?

A. Yes, I did.

Q. Do you have it in that notebook before you?

A. It is in this notebook.

Q. That book, however, contains matters other than core oil notes?

A. Yes.

Q. Are all the notes in that notebook referring to core oils notes made by you and in your own handwriting?

A. They are.

(Testimony of William L. Everson.)

Q. And were they made at or about the date that the respective notes bear? A. They were.

Mr. Aurich: I will offer in evidence as Defendants' Exhibit ZZ photostatic copies of the portions of the witness' book that refer to core oils. This book was heretofore shown to Mr. Hackley, and he has copies of these pages.

Mr. Hackley: This is subject to correction if error is found, Mr. Aurich?

Mr. Aurich: Certainly.

(The photostats referred to were marked Defendants' Exhibit ZZ in evidence.) [542]

Mr. Aurich: Q. Now, do you recall preparing a number of solutions that were to be subsequently used as core oils?

A. Yes, there were seven of those solutions.

Q. And they were called Tuemmler's Solution?

A. Yes.

Q. Why were they called Tuemmler's Solution?

A. Because Dr. Tuemmler personally told me to prepare them and gave me the directions.

Q. And Dr. Tuemmler was your superior?

A. Yes.

Q. What did you do with them after you prepared them?

A. I prepared them in one-gallon batches. They were put in clean one-gallon cans, marked with the corresponding number, and that ended my connection with them.

Q. Will you refer to your notebook and tell us

(Testimony of William L. Everson.)

the proportions of the ingredients and the ingredients that were contained in the first six numbered cans, that is, cans 1 to 6?

A. Cans 1 to 6——

Q. Will you just tell us what page of your notebook you are referring to, Mr. Everson?

A. They are on pages 52 to 54 inclusive. No. 1 contained 800 cc's of water and 3200 cc's of sodium silicate. No. 2, 1000 cc's of water and 3000 cc's of sodium silicate. No. 3, 1,176 cc's of water and 2,824 cc's of sodium silicate. No. 4, 1,333 cc's of water and 2,667 cc's of sodium silicate. No 5 contained the same amounts of water and sodium silicate as No. 3, and in addition 5.6 grams of sodium hydroxide. No. 6 contained the same amounts of water and sodium silicate as No. 4, and in addition 26.8 grams of sodium hydroxide. I might add that these amounts of sodium hydroxide were added in the solution to give the solution the same total alkalinity as sample No. 2.

Q. You have the degree of alkalinity before you there of the [543] various solutions?

A. I determined the total alkalinity titratable with normal sulphuric acid, and I have it here roughly as cc's of normal acid to grams of material.

Q. Do you have anywhere in your notebook the formula that you used for making up solution No. 7, and if you do, will you please give it to us and state where in your notebook it is found? I would also like to have that in ounces and quarts, if you do not have that in the other measurements.

(Testimony of William L. Everson.)

A. That is also found on pages 52 to 54, the measurements being made in cc's, and at your request I recalculated them to ounces and quarts.

Q. Will you give them to us both ways, please, first in cc's and then in ounces and quarts.

A. In cc's I took 220 cc's of Solution A, which is elsewhere defined, and 880 cc's of saturated sodium fluoride solution, and these were mixed, and then oil was added; 2,500 cc's of sodium silicate.

Q. What is Solution A?

A. Solution A, on page 20 of the notebook, is defined as a solution containing 4 ounces of anhydrous aluminum sulphate in one-half gallon of water.

Q. Can you give us the percentage or the measurement of the ingredients used in this formula in quarts and ounces, please?

A. In quarts and ounces, 2.7 quarts of sodium silicate of 40 degrees Baume, 1.2 quarts of water, 0.45 ounces of aluminum sulphate, calculated as the anhydrous salt, 1.3 ounces of sodium fluoride.

Q. I understand, to clear the record, all this work was done in 1938, because the photostatic copy of the pages of the book I have offered do not indicate that; that is right, isn't it?

A. All this work was done in 1938. [544]

Q. Can you tell me the Baume degree of each of the solutions 1 to 7 from your notebook?

A. Yes, I can. Solution No. 1 had a Baume of 35.0; No. 2 of 32.1; No. 3 of 31.6; No. 4 of 30.2; No. 5 of 31.6; No. 6 of 30.6, and No. 7 of 32.0.

(Testimony of William L. Everson.)

Mr. Aurich: No further questions.

Cross Examination

Mr. Hackley: Q. I just have a couple of questions, Mr. Everson. All this work was done in the year 1938, and do I understand by looking at your notes that it was done between May 6 and July 21, 1938? A. Yes, that is correct.

Q. Your products Nos. 1 to 6, to reduce it to simple terms, were composed of various solutions of waterglass and no other added chemicals; is that correct?

A. That is not correct. 1 to 4 were waterglass alone; 5 and 6 had sodium hydroxide added.

Q. What was the purpose of adding the sodium hydroxide?

A. I do not know just what point was attempted to be established. I was instructed to prepare them with the same alkalinity as solution No. 2, and tests showed that they had that alkalinity.

Q. Solution No. 7 included as qualitative constituents sodium silicate, sodium fluo-silicate and aluminum sulphate?

A. Sodium fluoride, not sodium fluo-silicate.

Q. Sodium fluoride? A. Yes.

Q. Why did you select sodium fluoride? Was that just the instruction given you by Dr. Tuemmler? A. That was the instruction given me.

Mr. Hackley: That is all of this witness.

The Court: Call your next witness.

EARL HENRY SPOTSWOOD,

recalled; previously sworn. [545]

Mr. Aurich: This witness has already been sworn, your Honor. Like Mr. Spiri, this witness did considerable work on core oils. I shall not detail it, because it is all in his reports.

The Court: That is sufficient for all purposes.

Mr. Aurich: Yes, your Honor.

Direct Examination

Mr. Aurich: Q. Do you recall approximately how much time you spent working with core oils while you were with the Shell Company?

A. Approximately a year and three months.

Q. That is, you commenced about January or February 1938 and ceased about March of 1939?

A. That is right.

Q. Now, when you were doing this work with these core oils, can you tell us generally what type of core oils you used? I am particularly concerned with the solutions. Strike the question. Perhaps I can get at it this way:

You did work with a number of varying and various solutions and used those solutions together with asphalt emulsion to work out a core oil?

A. That is right.

Q. Now, will you tell us some of those solutions that you work with, please?

A. One of the solutions was Ruddle's Solution; another was sodium silicate. Those are the two main solutions.

(Testimony of Earl Henry Spotswood.)

Q. Where did you get the Ruddle Solution with which you worked?

A. Substantially all of the Ruddle Solution with which I worked was obtained from Mr. Ruddle.

Q. What was your purpose in working with sodium silicate?

A. During the course of our experiments we had established, or I had established to my satisfaction, that there was no difference between the properties of sodium silicate and Ruddle [546] Solution, and therefore during my later experiments I used sodium silicate rather than Ruddle Solution.

Q. In other words, you performed a series of tests or experiments to determine the relative efficiency of Ruddle Solution as compared with sodium silicate solution alone when used as a core oil and mixed with asphalt emulsion?

A. That is correct. We carried out a number of different experiments. In one series of tests we prepared cores with both Ruddle Solution, asphalt emulsion, and sand, and in the other case sodium silicate, asphalt emulsion and sand, and these were subjected to high water absorption by using a moist humidor, and we found that over a period of time both sets of samples absorbed approximately the same amount of water. Other cores were made in long, cylindrical shapes and were tested for warping over a period of time, and both cores prepared were found to have worn—in other words, those prepared with Ruddle and those prepared with sodium silicate.

(Testimony of Earl Henry Spotswood.)

At another time a series of castings were prepared at the foundry using four different formulas. These formulas varied in that one contained sodium silicate, asphalt emulsion and sand, and the others contained sodium silicate plus one of the salts which Ruddle had specified. Another contained sodium silicate plus both of the salts which he had specified. The third mixture contained the sodium silicate and the other salt which he had specified, and the fourth solution contained all of the salts, or, in other words, was the Ruddle Solution.

Core sand mixtures were made with all of these different formulas, and in all cases the workability of the finished castings were identical for all practical purposes.

Q. By the way, this work, and in connection with your other work that you did, I believe, is all set forth in your [547] notebooks and your reports in some detail, Mr. Spotswood?

A. Yes, it is, very detailed.

Q. We will not go into that. Just give us your best recollection generally like you have done. You did some work with the Tuemmler solutions?

A. I did.

Q. What were the results or conclusions you arrived at by means of working with the Tuemmler solutions? That is, were the cores made with Solutions 1 to 7 all substantially the same, or were there any differences that you could note?

A. For all practical purposes there was no difference. I might say that these seven solutions

(Testimony of Earl Henry Spotswood.)

which were made under Dr. Tuemmler's supervision were given to myself and Mr. Waller, and were taken to the Vulcan Foundry and tests were made in which these mixtures were mixed with sand, cores were prepared, and during the operations observations were made. In all cases there were substantially no differences between any of the mixtures. These tests were made in which we had no knowledge of any of the mixtures subsequent to the experiments.

Q. Now, where did you do your work while working with the core oils?

A. My work was done at the Martinez refinery, Shell Development Company, Emeryville, and at the Vulcan Foundry in East Oakland.

Q. Do you recall exactly when you first commenced work at the Vulcan Foundry?

A. Yes, I first commenced to work there on April 26.

Q. How do you fix that date?

A. By my expense account.

Q. Is that the document which I am now showing Mr. Hackley?

A. I believe it is. Yes, that is.

Q. You have mentioned a man by the name of Mr. Waller. Just what did he have to do with this core oil matter? [548]

A. Mr. Waller had a very small part in the core oil picture itself. He was attached to the sales department, and during this particular set of experiments which I have related he was the observer dur-

(Testimony of Earl Henry Spotswood.)

ing the experiments, I carrying on the actual work.

Q. During any of the time you were working with Mr. Waller did you ever see him do any actual work in the making of cores?

A. No, I did not. During all of this time I did the work myself.

Q. Now, I want to split up the period of time in which you worked with core oils just generally. Did you ever do any work with a ready-to-use core oil or stable mixture or single-package core oil?

A. I did.

Q. Do you recall approximately when that work began?

A. I believe it was about August 1938.

Q. Prior to that time your work had been with the type of core oil where you mixed the sodium silicate and the asphalt emulsion right in with the sand separately?

A. Or the Ruddle Solution, yes.

Q. Or the Ruddle Solution? A. Yes.

Q. Then you worked from August 1938 for some period of time with these ready-to-use core oils?

A. Yes, I did, and during this period. I also worked from time to time with the separate mixtures.

Q. Generally did you notice any difference in the results obtained in so far as a satisfactory core is concerned, whether you were using this ready-to-use core oil or whether you were using Core-Min-Oil, as Mr. Ruddle has defined it for us?

A. No, I did not. In both cases the cores at-

(Testimony of Earl Henry Spotswood.)

tained were unsatisfactory. In the difference between the two, that is, the separate mixtures and ready-to-use, different problems would arise, [549] but other than that, in both cases there were a number of difficulties which we were never able to overcome satisfactorily.

Q. These different problems that you would mention, that would arise because of the use of one rather than the other, were due primarily to the fact that you also had the question of stability to look at or to consider when you were working with a ready-to-use core oil?

A. That is correct. That was one of the difficulties.

Mr. Aurich: Now, I was just going to ask this witness to detail to us what he did generally. If your Honor wants to hear that at this time, I will be glad to proceed.

The Court: You have had enough detail here.

Mr. Aurich: I mean just generally, like the last witness, Mr. Spiri, did. I am not going into any detail here. I wondered if your Honor wanted to hear that before noon.

The Court: I am anxious to get through with this case as soon as I can; that is my anxiety.

Mr. Aurich: Very well.

Q. Now, will you tell the Court——

The Court: Maybe if we adjourned now until two you will summarize what you have in mind and save us a lot of time.

(Testimony of Earl Henry Spotswood.)

Mr. Aurich: I think we can save a lot of time, your Honor.

The Court: All right, we will adjourn until two o'clock. [550]

Mr. Aurich: I am very appreciative of your Honor's suggestion made before the noon adjournment that perhaps I could shorten this testimony up by giving the matter further reflection, and I am glad to be able to say I have been able to do so.

Q. During this period of time from January of 1938 until March of 1939 that you worked on core oils, can you give me approximately the amount of time spent by you?

A. Approximately 1,700 hours were spent carrying out work in accordance with this project.

Q. And you were in court this morning and heard Mr. Spiri's testimony? A. Yes, I did.

Q. And you heard him mention something about an indirect gas-fired oven that was used at the Vulcan Foundry for performing some test work on core oils? A. I did.

Q. By the way, you worked with Mr. Spiri in connection with the work at the Vulcan Foundry, as indicated in his foundry reports? A. I did.

Q. What was the size of that furnace that you used there, and where did it come from, just in a few words?

A. That oven—indirect oven, was approximately two by four by four feet in height, and was brought down from the Martinez Refinery to the Vulcan Foundry.

(Testimony of Earl Henry Spotswood.)

Q. Where was it located at the Martinez Refinery.

A. It was our regular laboratory oven, prior to being used out at the foundry.

Q. And during all of the time that you were doing this work at the [551] Vulcan Foundry, were you using the core oil in regular commercial foundry operations, or were they in the nature of laboratory operations?

A. All of our experiments, both at the refinery and at the foundry, were limited to laboratory applications, in that there was close technical supervision during all of the process.

Q. Can you tell me approximately how many cores you made with these core oils that you worked with from January of 1938 to March of 1939?

A. Oh, I would say—oh, I would say at least several thousand.

Q. Did you hear Mr. Spiri list the difficulties that he said he had encountered with this core oil, which list he gave on the witness stand here this morning?

A. I did.

Q. To shorten it up, did you encounter those same difficulties that he referred to?

A. I did; and more, too.

Q. Are the difficulties that you encountered all set forth in your notebooks?

A. Yes, they are completely covered.

Q. What was the result of your effort of a year and three months in working with these core oils, consisting of Ruddle Solution and asphalt emulsion

(Testimony of Earl Henry Spotswood.)

and sodium silicate, as to whether or not you were able to produce a good core oil that could be used in commercial foundry operations?

A. We were unsuccessful.

Q. Do you recall the occasion that you met Mr. Ruddle and he disclosed to you the formula for making his Core-Min-Oil—irrespective of the date, now; just the occasion? A. Yes, I recall.

Q. What, if anything, was said by Mr. Ruddle at the time that he gave you the formula for making his core oil, with respect to keeping his formula secret?

A. No, nothing was said that I recall. [552]

Q. What, if any, promise was made by you as to keeping secret the fact that Mr. Ruddle used asphalt emulsion as one of the ingredients of his core oil? A. I made no such promise.

Q. Will you state whether or not Mr. Ruddle at any time, or at any place, ever made a statement to you to the effect that the use of asphalt emulsion in core oil was a secret, and at which time he admonished you not to divulge it to anyone outside of the employees of your company?

A. No, he never said that to me.

Q. Did you recently, at my request, obtain some Shell Y-104 asphalt emulsion and ship it any place?

A. I did.

Q. Will you tell us what you did, please?

A. I went out to the asphalt plant and secured a barrel of our regular production Colas Premix emulsion Y-104. I had this barrel brought up to

(Testimony of Earl Henry Spotswood.)

the laboratory, and secured two samples from this barrel, one a five-gallon sample and another a fifteen-gallon sample, and shipped them to Mr. Harry W. Dietert, Detroit, Michigan.

Mr. Aurich: I think that is all, your Honor.

Cross Examination

Mr. Hackley: Q. You just referred to shipping two samples of asphalt emulsion to Mr. Dietert in Detroit. A. That is right.

Q. Were those in metal containers, or what?

A. They were; they were in five——

Q. Were there labels on them?

A. They were in five-gallon cans, and had linen tags attached to the handles.

Q. What was marked on the linen tags?

A. The address, and the addressee, the contents of the can, and the place from where they were being shipped.

Q. You marked that yourself?

A. I had that typed on the tags.

Q. Did you see the tags after they were typed?

A. I did. [553]

Q. What did they say with reference to the contents of the can?

A. They had Colas Premix emulsion Y-104.

Q. Anything else?

A. That is, with respect to the substance in the cans?

Q. Did it say anything else on the tags, other than the address and that information?

(Testimony of Earl Henry Spotswood.)

A. And they had, "From Martinez Refinery, Shell Oil Company."

Q. Did you make any analyses of this product you sent to Mr. Dietert?

A. I didn't, but I understand it was analyzed.

Q. By whom? A. By Mr. Warren.

Q. That is just what you understand; you were not present when he did it, were you?

A. He told me that he had analyzed it.

Q. That is all you know about it yourself?

A. That is right.

Q. I would like to get an over-all picture of the general nature of the work as done by you in relation to the core oil project, and if I understood your testimony correctly, you commenced to work on that task sometime in the fore part of January, 1938, and continued until sometime in March of 1939, is that correct? A. That is right.

Q. If I understood your notes—and please feel free to refer to them if you wish in answering me—the first thing you did was to make some sand analyses, or cause them to be made, as the case might be? A. That is correct.

Q. That was done early in January of 1938, is that correct? A. February 8, I believe.

Q. And immediately after that you undertook to locate the source of trouble which had been defined as the production of inconsistencies in the baking of cores, where some cores that you had made under equal conditions came out good, and others bad, is that [554] correct?

(Testimony of Earl Henry Spotswood.)

A. That is right.

Q. You devoted yourself to that task until, if I understand you, the latter part of February, 1938, is that correct?

A. That is right.

Q. Now, at the end of that time you concluded that you had solved the problem of surface softening of the cores in baking by isolating that to the presence of the gases of combustion, CO₂, in the baking oven, is that correct?

A. That is right.

Q. Now, what did you do as your next test with reference to Core-Min-Oil after February 24th—as a general subject, now; I am not interested in the detail?

A. I don't know; I would have to refer to my notes and reports.

The Court: Q. As near as you can remember, state what you did.

A. I believe the next step was to determine a certain amount of data which could be used by the sales department for purposes of promotion.

Mr. Hackley: Q. Did you, after this work of February 24th, and, say, until the end of March, direct yourself primarily to the production at Martinez of cores made with what you called Core-Min-Oil?

A. I believe I worked on them during that period.

Q. Is that your present and best recollection of it?

A. Yes.

(Testimony of Earl Henry Spotswood.)

Q. Do you remember the formula that you used to make those cores? A. No, I don't offhand.

Q. Was it the formula given to you by Mr. Ruddle?

A. I believe I did use that formula at least some of the time.

Q. Did you possibly use other formulas, you think? A. I probably did.

Q. By the end of March, 1934, had you done, or observed being done, any work relating to attempts to put Core-Min-Oil in a single [555] package?

The Court: 1934?

Mr. Hackley: 1938; pardon me, your Honor.

Q. March 24, 1938, is the date I have in mind.

The Witness: I am sorry; I didn't get your question.

Mr. Hackley: I think I can repeat it.

Q. Prior to the end of March, 1938,—we will take that general date—had you made any tests or experiments, or were any done to your knowledge or under your supervision, relating to attempts to put Core-Min-Oil in a single package?

A. Prior to March, 1938?

Q. The end of March, 1938.

A. No, I don't believe there were any attempts made.

Q. Core-Min-Oil at that time was a two-package product, is that correct? A. That is right.

Q. Now, what did you do commencing with, say, the 15th of April, 1938, and on, say, until the 1st of June, with reference to Core-Min-Oil?

(Testimony of Earl Henry Spotswood.)

A. I did a lot of different things.

Q. Well, broadly speaking, what was the general nature of your work? Did you have any direct problem in mind that you were trying to work on, anything specific?

A. I should say that the majority of my work during this period was relative to the work being carried out at the Vulcan Foundry in which I endeavored to determine the information that could be used by the sales department for promotional purposes.

Q. You have used that phrase several times here. Will you explain just what you mean by that, what you were setting out to do? [556]

A. I mean that if the sales department were to attempt to market anything, that they would have to have certain data that they could use to present to the customer.

Q. Would that be your conclusion, or something that was told to you by the sales department?

A. I was instructed to get this data. In all of our products we generally have data which is used in their sale.

Q. What data were you trying to collect with reference to Core-Min-Oil?

A. We were trying to get a general background.

Q. That is, how it would act in a foundry, and what its attributes were for making a core, is that correct, and things of that sort?

A. That is right.

(Testimony of Earl Henry Spotswood.)

Q. And how it reacted to the pouring of castings, is that correct? A. That is right.

Q. You were making these strength tests that you referred to? A. Later on, in June.

Q. Now, up to, say, the end of June, had you been doing all of the things that I mentioned, other than perhaps the strength tests that I have referred to? A. Yes, I think I did.

Q. What formula were you using to develop the sales data during this period up to, we will say, the end of June, and after the middle of April, 1938?

A. The majority of the work during this period was done using a formula of 93 percent sand, $4\frac{1}{2}$ percent Ruddle Solution, and $2\frac{1}{2}$ percent asphalt emulsion.

Q. Based upon a sand content of 1750 cc's, what would be the number of cubic centimeters of each of the other two ingredients in that formula?

A. I would have to calculate it out.

Q. Can you do that?

The Court: It won't serve any purpose here.

Mr. Hackley: It would have the advantage, your Honor, of [557] giving us the same measuring stick that we have all through the balance of the testimony.

The Court: He gave the measuring stick.

Mr. Hackley: Q. What other formulas did you use for Core-Min-Oil during this same period, from the middle of April until the end of June, 1938?

(Testimony of Earl Henry Spotswood.)

A. I used many different formulas.

Q. Where did you get those formulas?

A. You don't get formulas; you try out formulas.

Q. Oh, these were experiments you were making?

A. That is right.

Q. You were not following any specific formula given to you by Mr. Ruddle?

A. No.

Q. You were making variations in the formula that was given to you by Mr. Ruddle?

A. Certainly, variations were made in the formula.

Q. During this period we are talking about?

A. Some isolated experiments were carried on, in which formulas were varied in order to determine certain variables.

Q. The bulk of the work was done, however, with Mr. Ruddle's original formula that you have just described?

A. If the formula which I quoted is one of Mr. Ruddle's original formulas, yes.

Q. Put it this way: The bulk of the work that you did in this period was with the formula that you just gave?

A. That is correct.

Q. Ninety-three percent sand, four and a half percent solution, and two and a half percent asphalt, is that correct?

A. That is right.

Q. Now, from the end of June down to the end of, say October, what were you doing with reference to Core-Min-Oil?

(Testimony of Earl Henry Spotswood.)

A. Again, a great number of things were being done. One of the [558] principal things which comes to my mind is that we were carrying out a considerable amount of work in order to determine strength and friability of Core-Min-Oil mixtures.

Q. What else were you doing in that period?

A. I don't recall; I would have to refer to my notes. It was various minor investigations of one sort and another.

Q. You were making cores, though, all during this period, weren't you? A. Yes.

Q. And pouring castings with those cores?

A. Occasionally a casting would be made.

Q. Approximately how many cores did you make between the 1st of January, 1938, and say the end of October, 1938? A. How many cores?

Q. Yes—with Core-Min-Oil.

A. I don't know; I wouldn't be able to estimate.

Q. Well, you said you made several thousand cores altogether. Now, what percentage of those would you estimate was made in the earlier period?

A. Well, it is 50 percent of the time; I would say that I probably made 50 percent of 2,000, or 1,000 cores.

Q. You would estimate that you made cores almost evenly, month by month, during the whole period we are talking about, from the 1st of January to March of 1939—January, 1938, to March of 1939?

(Testimony of Earl Henry Spotswood.)

A. Well, exclusive of the first several months, I would say that would be a fair basis for estimation.

Q. And starting with the month of April and running through the following March, would you say that these several thousand cores were very largely made during that period?

A. I would say so.

Q. And about evenly, month by month?

A. I would say so.

Q. And what did you do with reference to Core-Min-Oil between the end of October, 1938, and the time that you terminated your work [559] on core oils, if I understood that was what you did, in March of 1939?

A. If you mean on Core-Min-Oil mixtures comprising Ruddle's Solution or sodium silicate and asphalt emulsion and sand, I was conducting tests on emulsions which were prepared by Shell Development Company, composite emulsion, or so-called ready-to-use core oils, to determine their usability, during this period, as well as still working on the separate materials and with respect to the various difficulties that they comprised.

Q. Work, I believe you testified, was being done on that score by Mr. Warren, is that correct?

A. That is so.

Q. And Doctor Wright?

A. That is right. I might mention that in my previous answer I had mentioned that I had worked on those. I meant from the standpoint of

(Testimony of Earl Henry Spotswood.)

the applications end. In other words, I had nothing to do with chemical preparation; I only tested the finished products.

Q. When either Mr. Warren or Doctor Wright turned out a product which they referred to as a stable emulsion, then you would try it out in the foundry, is that correct?

A. Either the foundry or Martinez laboratory.

Q. With reference to making cores, I suppose?

A. Sand mixtures and cores. [560]

Q. When did you first start making experiments with sand mixtures and cores utilizing emulsions, so-called stable emulsions prepared either by Mr. Warren or Doctor Wright?

A. I don't recall offhand. I believe it was in October, or somewhere along in that period.

Q. 1938? A. Yes.

Q. Do I understand that when you use the term "core oil," you refer to any core oil which includes asphalt emulsion and sodium silicate, either with or without the other ingredients, such as aluminum sulphate and sodium fluosilicate?

A. Not necessarily. I stated in my answer that if you consider that as such, that is what I was working on.

Q. Do you consider Core-Min-Oil to be that? Is that what you meant?

A. Core-Min-Oil, as far as my understanding is concerned, consists of asphalt emulsion, Ruddie Solution, and sand.

(Testimony of Earl Henry Spotswood.)

Q. That is the true Core-Min-Oil, isn't it?

A. That is right.

Q. Now, when did you start work with a core oil where you omitted the constituents of Ruddle Solution and used only sodium silicate and asphalt emulsion for the making of cores?

A. I began to experiment on the sodium silicate very early, probably in April, 1938.

Q. And at what point did you reach the conclusion that you gave to the Court this morning, that cores prepared with sodium silicate in lieu of Ruddle Solution were substantially the same, if not the same, in all properties, as those made with Ruddle Solution? A. I believe in about June.

Q. 1938? A. That is right.

Q. And from then on did you devote yourself, in so far as sodium silicate-containing cores were concerned, to the formulas where aluminum sulphate and sodium fluosilicate were omitted? [561]

A. Substantially, yes.

Q. You have no present recollection of making any more cores with the Ruddle Solution after that, have you?

A. From time to time I believe further cores were made with Ruddle Solution, but substantially all the work was with sodium silicate.

Q. Did you ever do any work on the core oil employing linseed oil and albino asphalt?

A. Yes, I did.

Q. When did you start that work?

A. I don't recall. I believe it was somewhere in

(Testimony of Earl Henry Spotswood.)
the beginning of 1939, possibly later.

Q. Is that work referred to in your notes?

A. Yes, it is.

Q. I show you Spotswood Exhibit 3——

Mr. Aurich: "Spotswood Exhibit 3"?

Mr. Hackley: Spotswood notebook 3, which is——

Pardon me, Mr. Aurich——

Q. ——Exhibit 50, and for reference I hand you your other two notebooks and ask you particularly with reference to the last notebook, if there are references to your work with the albino asphalt in there? A. Yes, there are. [562]

Q. How long did you continue working with core oils?

A. March of 1939. What kind of core oils?

Q. Any kind of core oils.

A. There is a note, January 8, 1940, with regard to core oils, which is apparently the last date.

Q. What did you mean when you testified on direct examination that your work on this subject ran only until March of 1939?

A. That was with respect to Core-Min-Oils.

Q. But you did continue working on the subject of core oils after March of 1939, is that correct? A. At a later date I did.

Q. When did you resume work on core oils after March of 1939? Use your notes if you have to for that purpose. A. In August 1939.

Q. Do you have the exact date?

(Testimony of Earl Henry Spotswood.)

A. August 11.

Q. Would you just give the page numbers of your notebook, Exhibit 50, which refer to the work on albino asphalt-linseed oil products, and the dates of those entries.

A. Page 78, August 11, 1939; page 87, no date.

Q. The last page would be some time after the August 11 date; is that correct? A. Yes.

Q. Continue.

A. 88, no date; 95, no date; 96, no date; and 105, January 8, 1940.

Q. On whose instructions did you resume work on core oils on August 11, 1939?

A. On my superior's.

Q. Who was that?

A. I don't recall just now. I have had a number of shifts over a period of time. It would come down through the chief technologist.

Q. You talked about warping of the core and making certain tests to determine warping characteristics of cores made with Core-Min-Oil, is that correct? A. That's right. [563]

Q. Did you make any specific notes on your warping tests? A. Yes, there are notes.

The Court: What do you mean by "warping"?

The Witness: I mean that certain cores which have a long, narrow section are susceptible to warping or bending over a period of storage time, and in the event that they are bent they would be unsatisfactory.

The Court: Proceed.

(Testimony of Earl Henry Spotswood.)

Mr. Hackley: Q. Did you make any notes of your work on core warping? A. Yes.

Q. Do you have any way of quickly referring to your notebooks here and pointing out where that is found? A. On page 6.

Q. Of which of your notebooks?

A. Of notebook 2.

Q. That is Exhibit 49, I believe? A. Yes.

Q. Are all the notes of work done by you with reference to core warping on that one page?

A. I believe they are.

Q. Did you make any comparisons of the baking time of cores made with Core-Min-Oil as against other commercial core oils? A. Yes.

Q. Do you recall what your findings were in that connection, at least just generally?

A. Yes, generally, for small-sized cores we found that the—or I found that the Core-Min-Oil baked in a shorter period of time.

Q. What do you refer to here as Core-Min-Oil, the original Ruddie product or some variation of that formula?

A. It doesn't matter; either the Ruddie Solution or the sodium silicate worked in this case.

Q. To bake in a shorter time?

A. To bake in a shorter period of time.

Q. Do you recall making any baking tests with reference to [564] six-inch Merco-Nordstrom valves?

A. I recall that several cores of that nature were made. I don't know whether they were baking tests.

(Testimony of Earl Henry Spotswood.)

Q. Do you recall whether or not those cores made with Core-Min-Oil baked faster than cores made with linseed oil of the same type?

A. No, I don't.

Q. Do you have any notes on that work?

A. There are notes in my book on that six-inch core.

Q. Can you turn to those?

A. Yes, I have the notation.

Q. Could you find any reference to baking times in those notes? A. No.

Q. First tell where your notes are in the record, please.

A. On page 24, book 2, Exhibit 49, and again on page 27 there are notes relating to six-inch Nordstrom valves.

Q. Do you show any baking time at all on either one of those pages? A. No, I do not.

Q. What were those made of; do you show the formula? A. Yes.

Q. What was the formula used?

A. 93 per cent dry sand, 4½ per cent Ruddle Solution, and 2½ per cent Y-104 emulsion.

Q. Does that apply to all of the purported tests on those two pages mentioned?

A. It does with respect to those particular cores.

Q. To Merco-Nordstrom six-inch valve cores?

A. Yes.

Q. You have stated that you heard all of the

(Testimony of Earl Henry Spotswood.)

difficulties purportedly named by Mr. Spiri with reference to cores made with Core-Min-Oil and their use, I take it, in the foundry, and you state that you agree with them, and have even gone further, that there are other difficulties which he did not mention, which you recognized. Now, will you name the difficulties [565] which you are endorsing in that manner?

A. I can't remember all the difficulties that he enumerated.

Q. What are the difficulties that you think existed with Core-Min-Oil cores?

A. First, the Core-Min-Oil cannot be baked in a direct-fired oven; the Core-Min-Oil evaporates rapidly on the bench, causing a loss in strength of the mixture; it settles in the sand mix; it crusts over; it sticks to the tools, the equipment, and in the cope; it is highly susceptible to humidity; it has a very poor strength-collapsibility relationship. Core oils prepared in the ready-to-use packages were too viscous.

Q. That is the single-package product?

A. Single-package.

Q. What do you mean by "viscous"?

A. I mean that the—a good many of the mixtures would not pour from the cans; the mixtures would not mix evenly with the sand and would form pellets. The materials were not of enough concentrated strength; that is, you had to use too high a quantity of emulsion with the sand,

(Testimony of Earl Henry Spotswood.)

causing too wet a sand mix. That is all I can recall offhand.

Q. If I understood your testimony you recognized the existence of this inability to bake in a direct-fired oven in the presence of CO₂ in February of 1938? A. That is right.

Q. And at that time determined that these cores had to be baked in an indirect-fired or electric oven; is that correct?

A. Free from any combustion gases.

Q. Pardon?

A. Free from any combustion gases, yes.

Q. Now, when did you first observe that these cores made with Core-Min-Oil evaporated too rapidly?

A. That first became obvious when we started working in the Vulcan Foundry.

Q. That would be along in April 1938?

A. May 5, 1938. [566]

Q. It was immediately obvious, I take it?

A. It was.

Q. And the crusting over, I suppose that was observed there at the same time? A. It was.

Q. When you refer to evaporation rapidly, you refer to evaporation on the bench of the unformed sand?

A. Either on the bench, in the bin, or wherever the material happens to be stored.

Q. Did you ever try to overcome that problem by covering the material on the bench with a damp sack? A. We did.

(Testimony of Earl Henry Spotswood.)

Q. Did you find that solved the problem?

A. It was slightly effective.

Q. You don't recall whether it was sufficient for the purpose or not?

A. I recall it was not.

Q. When did you first note this settling of the mix; about the same time?

A. I believe it was around that time.

Q. And that pellet formation, I suppose you observed that about the same time?

A. No, that came in at a later date with respect to the ready-to-mix mixture.

Q. That only applied to the Ruddle ready-to-mix product, isn't that correct?

A. At that time, under the conditions of mixing that we were using, we never did have any trouble mixing the separate ingredients, because we always hand-mixed and got a thorough mixture.

Q. When you went to mechanical mixings you didn't do as good a job; is that what you tell us?

A. No, I didn't say that.

Q. I want to know what you mean by what you said.

A. I am saying that in the manner in which we mixed the stuff at the foundry we never ran into any difficulty on the separate mixtures. We always made hand mixes in most cases. In one case we did make a large mixture in the regular Vulcan mill and [567] the mixture was satisfactory. It was the Mueller type or, I believe, the Simpson Mixer.

Q. When was this, now, about what date?

(Testimony of Earl Henry Spotswood.)

A. I don't recall the exact date.

Q. Can you put it in any month of 1938?

A. Oh, June, July, somewhere in there.

Mr. Hackley: That is satisfactory for the purpose.

Q. This pellet formation you noted then, at about what time, for the first time?

A. Oh, that was around October or November.

Q. That is when you were working with the single-package product?

A. That is right—no, the ready-to-use product.

Q. What do you mean, the ready-to-use product?

A. Yes, that is right; you said single package.

Q. That is the single-package product, isn't that correct?

A. Yes; I misunderstood you.

Q. Now, this sticking to the tools and equipment — sticking to the cope, you observed that when?

A. On the first day we started to work at the foundry.

Q. That would be in April 1938—May, rather, 1938?

A. That is right.

Q. When did you first observe this susceptibility to humidity? What would you call that? Moisture absorption property or something of that sort?

A. Yes, water absorption tests were made in April 1938, although the actual susceptibility to humidity that we are talking about was not observed until probably November or December.

(Testimony of Earl Henry Spotswood.)

Q. How do you distinguish between water absorption tests and susceptibility to humidity?

A. Well, they are actually the same thing. [568]

Q. Each involved the hygroscopic characteristic of the core? A. That is right.

Q. And a core which will tend to absorb water would tend to absorb moisture from the atmosphere? A. Yes.

Q. When did you first conclude that there was a problem involved in this question of the relation between collapsibility or friability on the one hand, and working strength on the other?

Mr. Aurich: I think for the purpose of the record, I would like to have it noted that the witness is giving these answers without referring to his notes, in case any conflict should arise at some later date.

Mr. Hackley: The witness has his notes there.

The Court: Let the record show that that is done with the encouragement and suggestion of the Court.

A. That became fairly obvious after we had gathered together a considerable amount of data on the strength and friability along in June, 1938.

Mr. Hackley: Q. Now, you named two difficulties, and I didn't quite understand what you meant by either one. One was the problem arising from a too wet mix being required, or something like that—I don't want to misquote your answer, so I wish you would tell me just what you meant by it.

A. Yes.

(Testimony of Earl Henry Spotswood.)

Q. You said something about no concentration.

A. A number of the ready-to-use mixtures were of a low concentration of active ingredients, that is, sodium silicate and asphalt emulsion, which was necessitated by the fact that we had to add other materials in order to make a stable emulsion, and when this [569] condition was achieved we therefore had to use more of the stable emulsion with the sand in order to get an equivalent strength to what we obtained with less separate ingredients previously.

Q. When did you first observe this condition?

A. This condition was observed soon after we began to experiment with single-package or ready-to-use material.

Q. When would that be, approximately?

A. In October, I believe I testified.

Q. One other thing here—did you want to refer to your notes for that? Please do, if you wish; I don't want to mislead you on this.

The Court: For purposes of our case, what would be the difference whether it would be in October or August?

Mr. Aurich: I think your Honor will find that when the case is argued before the Court there is going to be a very significant argument made by plaintiffs' counsel as to whether it was prior to the time that the Shell Company exercised the option.

The Court: I understand all that.

Mr. Aurich: That is his purpose. To me, so far

(Testimony of Earl Henry Spotswood.)

as I am concerned, it makes no difference. From my view on the case, it doesn't make any difference when they occurred.

The Court: Let's get through with this witness.

Mr. Hackley: I am nearly completed, your Honor.

Q. Did you verify your time there?

A. Yes; October is essentially correct.

Q. Now, do you have in your records the formula which you employed for making cores with the linseed oil-albino asphalt product?

A. I have records of those various mixtures.

Q. Will you state the formula of that product which you found best, for the record, please?

A. I wouldn't be able to do that.

Q. Why is that?

A. Because from the data we obtained here we [570] don't know which one is the best kind.

Q. What would you consider to be a typical linseed oil-albino asphalt product?

A. There are no typical mixtures; there are different variations of them. One will have certain properties and another one other properties.

Q. You would vary the formula to achieve the different desired results, is that correct?

A. That is right.

Q. Did you use a straight linseed oil in that product?

A. One of the components in a number of cases was raw linseed oil.

(Testimony of Earl Henry Spotswood.)

Q. Did you use other variations of linseed oil?

A. What do you mean by "other variations"?

Q. Well, you spoke of using raw linseed as one of the components.

A. Yes.

Q. On some of the occasions. Now, what did you use on other occasions?

A. Well, I should say that in all cases one of the components was linseed oil.

Q. Did you prepare this albino asphalt-linseed oil emulsion product yourself, or was it prepared by someone else and sent to you for testing?

A. Did you say "emulsion"?

Q. Albino asphalt, I should say. If I said "emulsion," I mean "albino asphalt."

Mr. Aurich: May it please the Court, if the Court is interested in hearing about this albino asphalt-linseed, I will make no objection, but it serves no purpose in this case, and it is an utter waste of time, and I object to it on the ground of gross immateriality.

Mr. Hackley: I would be very glad to go into the materiality.

The Court: What is the materiality?

Mr. Hackley: Just this: This product, as we have seen from the reports which this company has produced in evidence here [571] particularly the report which I read to your Honor the other day, an exhibit to Doctor Wright's testimony, show that after the attempt was made by Shell to cancel this contract, they were advised by their technical divisions to market the product albino asphalt-linseed

(Testimony of Earl Henry Spotswood.)

blend. Now, under the contract itself, there is an obligation on the part of the Shell Company to market Core-Min-Oil, or any other product which they prepared along this line, and to pay to Peck and Ruddle a royalty on it. Now, the answer——

The Court: The fact is that they didn't try to market anything, is that correct?

Mr. Hackley: That is correct; they made no effort to market anything.

The Court: That is the answer, so far as this Court is concerned.

Mr. Aurich: Of course, I don't agree with counsel's interpretation of that portion of the contract.

The Court: That is the theory of his case.

Mr. Aurich: I can point out the very decisive answer to that very shortly; in just about less than two minutes. The only clause in the contract requiring Shell to diligently attempt to market and sell anything is paragraph 2, and it reads as follows; just the two lines:

“Shell shall diligently attempt to sell Care-Min-Oil”——

we know what that is——

——“and other compositions for foundry use as covered by said applications or later patents.”

Now, the word “said,” there, refers to the three Ruddle applications mentioned in the forepart of the contract, and there isn't one of those which relates to albino asphalt or linseed oil, or other sorts

(Testimony of Earl Henry Spotswood.)

of ingredients, and if you follow counsel's argument [572] to its extreme, it would mean that Shell could be required, under his construction, to go out into the market today and buy Linoil, for example, and sell it, and pay Peck and Ruddell a royalty, which, of course, is ridiculous.

The Court: Is that all from this witness?

Mr. Hackley: I think I have an unanswered question. Whatever it is, I would like to hear it. May we have it read, Mr. Reporter?

(Question read.)

Mr. Hackley: So that the record will be clear, I will reframe the question.

Q. Mr. Spotswood, you have told us of your work with the albino asphalt-linseed product. Did you prepare that yourself, or was it prepared by someone else and sent to you for use?

A. I prepared my own.

Q. The ones that you used in your own tests?

A. Yes.

Q. Where did you get the suggestions for the formula? Was that your idea, or was it sent to you by someone else in the company?

A. I got some of the data from the reports put out by Shell Development Company.

Q. What report do you refer to? Doctor Wright's reports? A. Yes.

Q. Just to identify that, do you refer to the material contained in Wright Exhibit 54?

A. Yes, that is right—

(Testimony of Earl Henry Spotswood.)

Mr. Hackley: That all.

The Witness: I might add that——

Mr. Hackley: Q. Oh, pardon me, sir.

A. (continuing): —that we get these—all these reports which you mentioned here, the one you showed me, as a routine matter.

Q. They are circulated regularly through the company and would come to your attention?

A. Through the company, and would [573] come to us.

The Court: Step down.

Mr. Aurich: Doctor Wright.

The Court: How many witnesses have you got left?

Mr. Aurich: I have got four left, all very short.

The Court: We will take a recess and then we will conclude with those witnesses. I expect to conclude this case today.

Mr. Aurich: I can't control the cross, but I am sure we can so far as the direct is concerned.

(Recess.)

Mr. Aurich: Counsel and I have agreed to dispense with the necessity of calling a witness—I am sure that will please the Court, at least—and we have stipulated that if Doctor Wright were recalled as a witness, he would testify that he prepared Defendants' Exhibit YY for identification; that the formulas therein are the formulas that are used in the corresponding test numbers in Defendants' Exhibits MM and NN, and where they are found in

Doctor Wright's notebook. That is, of course, subject to correction if error is found.

I now offer Defendants' Exhibit YY in evidence.

(The folder heretofore marked Defendants' Exhibit YY for identification was received in evidence.)

Mr. Aurich: Mr. Waller.

I think he has been sworn; he was on the stand.

ARTHUR C. WALLER,

Recalled for the Defendants; Previously sworn.

Direct Examination

Mr. Aurich: Q. You are the same Mr. Waller who testified here before, or who was called as a witness? A. Yes. [574]

Q. Will you tell us just briefly and generally what experience you had in foundry practice and coremaking up to the time that you commenced to act as an observer of Mr. Ruddle's work?

A. Only the experience of the observation in the two foundries, the Macauley Foundry and the Vulcan Foundry. I have never had any experience in actually making cores—it was observation purely—and that extended up to the time about mid-June of 1938 from about mid-February.

Q. In other words, a period of about four months is all the experience you have ever had in your life with foundry practice and core making?

(Testimony of Arthur C. Waller.)

A. That is right.

Q. And that experience consisted of merely acting as an observer, as you have just described?

A. Yes.

Q. Do you recall the action when Mr. Ruddie told you that he used asphalt emulsion in his core oil? I do not mean the date, Mr. Waller, but do you recall that he did mention that to you?

A. Yes.

Q. Now will you tell the Court, please, what, if anything, Mr. Ruddie said about keeping anything secret?

A. I don't recall anything about keeping it secret.

Q. Did Mr. Ruddie ever tell you that he had a new core oil which contained asphalt emulsion and another ingredient, and that asphalt emulsion, as a core oil, was a secret with him, and he did not want you to tell anybody about it? A. No.

Q. Did he ever make any such statement to you at any time? A. Not to my recollection.

Q. In connection with your brief period of time working with or observing Mr. Ruddie's activities, did you make any survey of the market in the United States to determine how much core oil could be sold, if any? A. No, I did not. [575]

Q. Did you have any knowledge of your own on that subject at all? A. No, I had not.

Q. Did you ever have any knowledge of your own during the period of time that you were work-

(Testimony of Arthur C. Waller.)

ing with this Mr. Ruddle, as to the number of foundries using direct-fired ovens as compared with those using indirect-fired ovens?

A. Nothing in the way of accurate information. It was discussed among us many times, but nothing was ever furnished me, nor did I ever know of any definite figures.

Mr. Aurich: That is all.

Cross Examination

Mr. Hackley: I just want to find out one thing.

Q. Mr. Waller, you say "discussed among us." Whom do you mean? A. I beg your pardon?

Q. In your last answer you said, "It was discussed among us . . ." Now, who do you mean?

A. Between Mr. Ruddle, Mr. Peck, and whoever—Mr. Spotswood or the group—the group that was together many times, riding back and forth to and from the foundry.

Q. And discussed with Mr. McSwain, too, I presume?

A. The discussions were very general; the expressions of opinion about what we were engaged in.

Mr. Hackley: I will rely on my deposition for the cross examination of the witness.

The Court: Step down.

Mr. Aurich: That is all, Mr. Waller. Thank you, Mr. McSwain, please.

JOHN F. McSWAIN,

Recalled for Defendants; Previously sworn.

Mr. Aurich: This gentleman has heretofore been sworn, your [576] Honor, and I interrupted his direct examination right in the course of the proceeding. I am going to abandon what I had planned to produce by this witness and proceed along another line.

Preliminary to my examination, I will offer in evidence a letter dated April 18, 1938, from Mr. J. F. McSwain to Mr. Harold Martin of the Vulcan Foundry, which counsel has stipulated may be admitted without objection, and I will ask that it be marked Defendants' Exhibit AAA. This letter is a letter written by this witness making some offers to the Vulcan Foundry. I do not believe I will take the time to read it now.

(The letter referred to was marked Defendants' Exhibit AAA in evidence.)

Direct Examination

(resumed)

Mr. Aurich: Q. I will show you a document, Mr. McSwain, which has been marked Defendants' Exhibit GG for identification, and ask you if you can recognize that, and, if so, state what it is and where you got it, just briefly, please?

A. These are notes that were made in my office by myself, I think on the afternoon that we signed the contract; either the afternoon we signed the contract or the next day.

(Testimony of John F. McSwain.)

Q. Where did you get the information that appears on that exhibit? A. From Mr. Ruddle.

Mr. Aurich: I now offer in evidence the sheet of paper which has heretofore been marked Defendants' Exhibit GG for identification.

(The notes referred to, heretofore marked Defendants' Exhibit GG for identification, were received in evidence.)

Mr. Aurich: Q. Now, I want you to take in the entire period of time encompassed by this Core-Min-Oil matter, Mr. McSwain, from Mr. Ruddle's first visit, let us say, in December, 1937, or January, [577] 1938, up until the time Shell cancelled the contract in July of 1939, and I would like to have you tell the Court briefly and generally what your experience in foundry practice and coremaking was, taking into consideration that entire period of time, as well as what, if anything, you knew about it prior thereto.

A. Well, I think I have testified here previously that I knew nothing whatever of foundry practice before Ruddle came to my office and told me that he had a core oil and asked me to go to Macauley's Foundry with him.

Is it necessary to go over Ruddle's visit to me? I think that is already covered.

Q. No; I think if you confine your answer to my question, it will be sufficient.

A. We thought that there was a possibility for developing a market for emulsion——

(Testimony of John F. McSwain.)

Q. I don't want to interrupt, Mr. McSwain; all I want you to do is to tell the Court how much experience you personally had in foundry practice and coremaking from January, 1938, or December of 1937, until July of 1939.

A. Well, I had no experience in coremaking.

Q. Can you tell us how many times you were in a foundry, or in foundries, during that period of time—just an estimate?

A. I couldn't—oh, possibly a half a dozen times.

Q. Do you recall the occasion when Mr. Ruddle first told you that asphalt emulsion was used as one of the ingredients of his core oil?

A. Yes.

Q. What, if anything, was said by Mr. Ruddle at that time, or at any subsequent time, about the fact that the use of asphalt emulsion as a core oil was secret?

A. Nothing.

Q. Did he ever, at any time, tell you that the use of asphalt [578] emulsion as a core oil was a secret?

A. No, sir.

Q. And that you were enjoined not to discuss it or disclose it to anyone outside of Shell Company representatives?

A. No, sir.

Q. Did you ever make, or have made for you, a survey of the market for core oils?

A. No, sir.

Q. At any time?

A. No, sir.

Q. Did you ever make any survey, or have any survey made at any time, as to the number of foundries in the United States that used electric ovens?

A. I did not.

(Testimony of John F. McSwain.)

Q. Did you at any time or place ever tell Mr. Ruddle that there were many foundries in the United States that were electrically-heated?

A. No, sir.

Q. Do you know whether that is a fact or not?

A. I have no information.

Q. What information do you have today, if any?

A. No more today than I had then.

Q. Do you recall the shipment of some core oil to the Axelson Foundry in 1939 sometime?

A. Well, I know that we shipped some down there.

Q. And it was in 1939? A. Yes.

Q. Do you recall having a conversation with Mr. Ruddle following the shipment of that oil to the Axelson Foundry, at which time you told Mr. Ruddle that there was a market for Core-Min-Oil of 60,000,000 gallons per year, and that there was a good likelihood of a market price of 50 cents per gallon being established or set for that oil?

A. I do not.

Q. Did you ever know that there was a market, as Mr. Ruddle has testified, of 60,000,000 gallons per year of Core-Min-Oil?

A. The only information we had with regard to the quantities of [579] Core-Min-Oil—or core oils that were used in the United States, came from Ruddle.

Q. By the way, do you recall how the core oil that you shipped to the Axelson Foundry was re-

(Testimony of John F. McSwain.)

ceived by that foundry, that is, did they tell you it was a good core oil, or a bad core oil?

A. They told me it was a bad core oil.

Q. Did they subsequently buy some of that core oil? A. They never bought a gallon.

Q. Do you recall any discussion with Mr. Ruddle concerning albino-linseed oil?

A. No, I do not.

Q. Do you know of your own knowledge how the baking time of cores made with albino-linseed compares with cores made with regular linseed oil that is used in foundries? A. I do not know.

Q. Do you know which, if any, has the faster baking time? A. I do not know.

Q. Did you ever tell Mr. Ruddle that cores made with albino-linseed oil had a much faster baking time than cores made with regular linseed? A. No.

Q. Do you know generally the business of the Shell Development Company, one of the defendants in this suit? A. Yes, sir.

Q. Are they a manufacturing or selling concern?

A. They are not.

Mr. Aurich: I think that is all, your Honor.

Cross Examination

Mr. Hackley: Q. Is Shell Development Company in any way related to the Shell Oil Company, Incorporated?

Mr. Aurich: I object to that as calling for the conclusion and opinion of the witness.

The Court: If he knows he may answer.

(Testimony of John F. McSwain.)

The Witness: Shall I answer? [580]

The Court: Q. If you know, you may answer it.

A. I assume that to be the case, although I do not know that of my own knowledge.

Mr. Hackley: Q. You work continuously and closely together? A. Yes.

Mr. Hackley: Your Honor, I have previously offered in evidence, and there is offered only for identification, because of the question of the interpretation of Rule 26 (d), the deposition of this witness, which would comprise my cross examination of the witness. In the interest of time, I would like to re-offer that deposition as my cross examination, in which case I will not have any cross examination to make.

Mr. Aurich: I will have to stand on my legal objection to that.

The Court: Objection sustained.

Mr. Hackley: Q. Did you make any representations to Mr. Ruddle at any time, regarding the sales force, size of the sales force, and the ability of the sales force of the Shell Oil Company?

A. The extent of our sales force was probably discussed. What you mean by "representations" is not clear.

Q. Did you describe your sales force?

A. I could not describe it in any detail, because I don't know.

Q. I will put it this way: Do you remember saying anything to Mr. Ruddle about the fact that

(Testimony of John F. McSwain.)

the Shell Company had something like 5,000 salesmen throughout the United States?

A. Well, I have never known whether they had 5,000—I will say, no, I don't know how many salesmen they have—never have known.

Q. Do you remember making that same general statement, perhaps using the word “thousands,” referring to the number of salesmen in the company?

A. I do not recall making the statement. [581]

Q. You would not say you did not make such a statement? A. No.

Q. Do you remember saying, in connection with the salesmen of the Shell Company, that if Shell were to take on Core-Min-Oil, they would be in a position to call on virtually every foundry in the United States at least once a month?

A. Well, I do not recall the conversation, if that is what you mean.

Q. You remember saying, in substance, that to Mr. Ruddle at some point, is that correct?

A. Well, I have no specific recollection. It is a remark that I might have said quite easily.

Q. You would say it is quite likely that you may have made some such statement?

A. Well, the fact is we have a great many salesmen scattered all over the United States.

Q. Do you remember discussing with Mr. Ruddle or Mr. Peck, or both of them, the subject of core wash being sold by Shell Oil Company, a core wash developed by Mr. Ruddle?

A. Well, I do not recall Peck's being present.

(Testimony of John F. McSwain.)

Q. It was with Mr. Ruddle, was it?

A. I recall a discussion with Ruddle relative to a core wash.

Q. Just briefly, tell us what you recall.

A. Ruddle came into my office while we were negotiating for a contract, all out of breath; he had just come from Vulcan's Foundry. He stated that Harry Leas had washed a core with a composition containing his secret solution, and that it made a splendid core wash. Subsequent to that I discussed the matter with Mr. Gratama, and suggested that if there were other uses in a foundry for this so-called core oil, that if we were going to have any sort of control in the foundry, it should be included in the contract, and that accounts for the insertion of the clause in that respect.

Q. Do you remember Mr. Peek and Mr. Ruddle wanted to keep the core wash out of the present contract?

A. What was that? [582]

Mr. Hackley: Will you read the question, Mr. Reporter?

(Question read.)

Mr. Hackley: Q. So they would be free to deal on it with somebody else?

A. There might have been some discussion to that effect.

Mr. Hackley: Q. Mr. McSwain, I will show you your examination in a deposition here, and ask you if this was your testimony at the time you gave your

(Testimony of John F. McSwain.)

deposition in this proceeding on December 3, 1940?
I read from page 42:

“Q. Do you remember that Mr. Peck and Mr. Ruddie wanted to keep that core wash development out of this present contract, so they would be free to deal with somebody else on that? A. I believe that they did.

“Q. Do you remember that your company insisted on that being included in the deal when the contract was made?

“A. I think that we did that.”

That was your testimony, was it?

A. If this is a true record of the thing, I would say it was.

Mr. Aurich: I will stipulate to that.

Mr. Hackley: Q. Do you remember on occasion telling Mr. [583] Ruddie, during the period when attempt was being made by your company to put Core-Min-Oil in a single package, that if the company could not get the product into one package, sell it in that form, they would work out a method of selling it in two packages?

A. I do not recall ever having made such a statement and question my having made it.

Q. Would you say it is quite possible that you made such a statement? A. No, I would not.

Q. Is this the testimony that you gave in your deposition on that point? I will read it to you and you can examine it:

(Testimony of John F. McSwain.)

“Q. On many, many occasions, isn't it true that you told Mr. Ruddle”——

Mr. Aurich: What page?

Mr. Hackley: Pardon me; page 67, Mr. Aurich.

Q. (continuing reading) ——“that if you couldn't get this thing lined up in one package successfully, your company would market it just as it had been turned over to them in the first place, that is, Ruddle Solution in one carton and asphalt emulsion in the other?

“A. Are you referring to the time when we determined that the Ruddle Solution had no value, or after?

“Q. Well, let's take that time before, if there was such a time.

“A. There was such a time. I don't recall any specific conversation, and I repeat that I must go back to a conclusion.

“Q. Well, it is your opinion now you probably did say some such thing?

“A. It is quite possible.”

A. Your question is not the same.

Q. This was your testimony?

Mr. Aurich: I will stipulate that the witness gave those [584] answers to those questions.

The Witness: If the Court please, he has asked about a different period of time. He asked about the time when he tried to put it in a different package.

(Testimony of John F. McSwain.)

Mr. Aurich: I will point that out later, Mr. McSwain.

Mr. Hackley: Q. Do you remember any discussions with Mr. Ruddle on the subject of selling Core-Min-Oil in two packages, or by a licensed method, whereby the foundry would be licensed to make cores with Core-Min-Oil, whereby they would buy solution from you, and asphalt, as they chose, and pay a license fee for operating under Ruddle patents?

A. I don't remember any specific conversation, but it is quite possible many such conversations were held.

Mr. Hackley: That is all.

Mr. Aurich: That is all, Mr. McSwain.

ROBERT B. HARBOTTLE,

Called for Defendants; Sworn.

The Clerk: Q. Please state your full name.

A. Robert B. Harbottle.

Direct Examination

Mr. Aurich: Q. Will you give us your age, and your residence, and your occupation, please?

A. My age is 30, my residence 1568 Euclid, in Berkeley, and I work as an accountant for Shell Oil Company, Incorporated.

Q. How long have you been employed by the Shell Oil Company as an accountant?

A. For eight years.

(Testimony of Robert B. Harbottle.)

Q. At my request have you made up a statement listing the amount of money that the Shell Oil Company and the Shell Development Company have expended in connection with their attempt to develop [585] a core oil?

A. Yes, I have.

Q. Is that the document that I now hand you?

A. That is it.

Q. You have a copy of it in your pocket?

A. Yes, I have one in my pocket.

Q. Will you just refer to that, please? What period of time is covered by the tabulation and figures that appear on this sheet?

A. From late 1937 to the middle of 1939.

Q. Does this document profess to disclose the actual amount of money that Shell Oil Company and Shell Development Company expended in connection with their work on core oils, or is it an approximation based upon the fact and date set forth in the sheet?

A. It is an approximation of the direct cost, omitting all overhead.

Q. In other words, if I understand you correctly, the total amount of that would be larger than the amount that appears on this sheet?

A. Yes.

Q. Just describe briefly how you did this and how this was prepared.

The Court: You may give us the total. That will be sufficient.

Mr. Aurich: Q. All right, just read the total in the record.

A. \$16,250.

Mr. Aurich: That is all.

(Testimony of Robert B. Harbottle.)

Mr. Hackley: Your Honor, I assume this document is going to be offered.

Are you going to offer it, Mr. Aurich?

Mr. Aurich: No—I will offer it if you want.

Mr. Hackley: I want to object to any testimony regarding this document or the giving of this total here on the ground that it is not the best evidence, and on that ground I move to strike the [586] testimony.

The Court: Let the document and let the testimony go in evidence.

Mr. Aurich: That is all.

(The statement referred to was marked Defendants' Exhibit BBB in evidence.)

Mr. Aurich: Any cross examination?

Mr. Hackley: No cross examination. I have nothing here I can go on.

Mr. Aurich: That concludes the defendants' case, with the exception of two offers I would like to make at this time.

I would like to offer in evidence the deposition of Lydell Peck under the provisions of Rule 26 (d) (2) of the Rules of Civil Procedure, and I will ask that it be deemed read in evidence, unless the Court or opposing counsel insists that I read it.

Mr. Hackley: I have no objection.

(The deposition referred to was marked Defendants' Exhibit CCC in evidence.)

(Defendants' Exhibit CCC, the deposition of

Lydell Peck, is set out at page 1495 of this printed record.)

Mr. Aurich: I also offer in evidence, under the same procedure that Mr. Waller's deposition was offered here, but under the provision of Rule 26 (d), subparagraph (2), the deposition of Mr. Allan B. Ruddle, and ask that it be deemed read in evidence, unless there is some objection to that method of offering it.

Mr. Hackley: It strikes me as needless and cumulative, your Honor. I have no objection otherwise.

Mr. Aurich: There are many matters in there that were not brought out in the trial, which are quite essential to the defendants' case, and I do not want to take the time to recall Mr. Ruddle and repeat what we have already in the record.

(The deposition referred to was marked defendants' Exhibit DDD [587] in evidence.)

(Defendants' Exhibit DDD, the deposition of Allan B. Ruddle, is set out at page 1159 of this printed record.)

Mr. Aurich: In connection with Mr. Ruddle's deposition, I offer in evidence as Defendants' Exhibit R, the document which was identified in the deposition as Defendants' Exhibit R, being a letter from Mr. Ruddle and Mr. Peck to the Shell Oil Company, and fully identified therein.

Mr. Hackley: I have no objection.

(The letter heretofore marked Defendants'

Exhibit R in the deposition of Mr. Ruddie was received in evidence.)

Mr. Aurich: I also offer in evidence the document which has been heretofore referred to as Defendants' Exhibit T, both in the deposition and at the trial, and ask that it be marked as Defendants' Exhibit T here. The document has been identified in the deposition.

(The document heretofore marked Defendants' Exhibit T in the deposition of Mr. Ruddie was received in evidence.)

Mr. Aurich: The defendants rest.

(Defendants rest.)

Mr. Hackley: Mr. Aurich, I spoke to you a few moments ago about a copy of a letter.

Mr. Aurich: I will stipulate to that.

Mr. Hackley: You will stipulate that it may go in?

Mr. Aurich: No; I will stipulate to its authenticity.

Mr. Hackley: That is what I mean.

I have arranged with counsel to offer Plaintiffs' Exhibit 28 for identification without further identification as an exhibit, although I understand Mr. Aurich reserves certain objections. The letter was written by Mr. Peck and, if you recall, he so testified.

You would agree to that much?

Mr. Aurich: I have no objection to the authentication. [588]

Mr. Hackley: I will offer as Plaintiffs' Exhibit

28 the document previously identified as Plaintiffs' Exhibit 28 for identification.

Mr. Aurich: I object to it on the ground it is hearsay. It is a letter written by Mr. Peck to the American Brake Shoe & Foundry Company, I believe, dated February 24, 1938, long prior to the date of the contract or any suit.

The Court: I will allow it in subject to a motion to strike.

(The letter heretofore marked Plaintiffs' Exhibit No. 28 for identification was received in evidence.)

Mr. Hackley: I will say in that connection it is only offered to fix a date of Mr. Ruddle's in his testimony.

Mr. Aurich: If that is all——

Mr. Hackley: That is all on this point.

Mr. Aurich: I have no objection.

Mr. Hackley: Your Honor, on this question of rebuttal, we are not going to offer any testimony by witnesses as such by way of rebuttal. This case, like so many others where an expert is called on the one side and experts are available on the other, is one where there comes a conflict of fact, which should be, and is readily determined, in fact. Your Honor has heard the witnesses for the Shell Company come in here and consistently say that Core-Min-Oil is useless to make a good core, and they have, in some cases, modified that a little bit by saying you can make a good core out of it if you make it in an electric oven, or if you make it in a direct-fired oven

where the gases of combustion are not exposed to the core.

We produced two witnesses on the case in chief of the plaintiff who testified that, from their own practical work in the foundry, they made superior cores from the product; made them [589] readily, without any difficulty; and I would like to propose, your Honor, that we be given an opportunity to demonstrate to your Honor, if your Honor would wish so to do, at the Macauley plant at any time convenient to the Court, the making of a core with Core-Min-Oil in the presence of our opponents; the baking of that core, the pouring of the casting with it, and show to your Honor, who is certainly not unfamiliar with the coremaking art, precisely why our testimony on that subject is the testimony that must control.

The Court: The first thing that occurs to me is how are you going to dry the cores?

Mr. Hackley: The cores will be dried in either of three ways: in an electric oven, under a hood, or in the oven with the gases removed and after the fires are turned out.

The Court: You will have to eliminate two of those at the very outset: one, with your electric drier, and the other, with the cover, either of which is not essential to this case.

Mr. Hackley: I just would be prepared to demonstrate here—now, if your Honor would not care to observe the demonstrations, on the theory that ex parte tests here offered by the defendants are entitled to little, if any, weight—I would like to pro-

pose that inter-party tests be made, and that the record be established once and for all precisely what the facts are on this case. I would like to repeat the offer to demonstrate it to the Court. If the Court would prefer not to do that, then I would rest the case of the plaintiffs at this point.

The Court: Do both sides submit your cases?

Mr. Aurich: I have nothing further to offer.

The Court: All right.

What is the next step?

Mr. Aurich: The next step, I assume, would be the question of [590] submission, and on that point, it is our wish to comply with whatever suggestion the Court has, in every way.

The Court: What is your thought?

Mr. Hackley: My thought is, your Honor, there is such a tremendous amount of evidence here, it would be more easily brought together and assembled for the study of the Court in a brief, rather than an oral argument, although I am prepared to work in either direction. I have not, purposely, during this trial, attempted to read to your Honor the notes, records and documents that were put in here, because that is a highly time-consuming thing. There are all those documents, admissions on the part of Shell, which in my opinion support every allegation we have made in this case. As a matter of fact, we are prepared to try this case on the records that the Shell Company prepared on this product, and which became records prior to the time they decided they wanted to get rid of this product.

The Court: How much time would you like to brief this case?

Mr. Hackley: I would like to ask your Honor for 30 days. I have an appearance at the Patent Office, and another one also; otherwise I would try to do it in a shorter time.

The Court: How long will it take you?

Mr. Aurich: I hesitate to ask for 30 days. I would like to ask for 20 days, with the privilege, at least, of asking for 10 more later on. I do not know. The size of my brief, of course, will depend upon what the Court will do.

The Court: The Court is prepared to tell you what to do.

Mr. Aurich: I am prepared to submit the matter without any brief, now.

The Court: Twenty, ten and five.

Now, let me warn you that there will be no extension of time [591] here. Do not waste your time coming out here with stipulations. That is final.

Mr. Aurich: We will have our brief in within that time.

The Court: I intend it for both sides.

Mr. Hackley: I understand, your Honor.

(Submitted—20, 10 and 5.) [592]

PLAINTIFFS' EXHIBIT No. 37

DEPOSITION OF ARTHUR C. WALLER

In the Southern Division of the United States District Court, in and for the Northern District of California.

LYDELL PECK and ALLAN B. RUDDLE,
Plaintiffs,

vs.

SHELL OIL COMPANY, INCORPORATED, a
corporation, and SHELL DEVELOPMENT
COMPANY, a corporation,

Defendants.

Be It Remembered: That on Tuesday, November 25, 1941, at the hour of 10:00 o'clock A.M., pursuant to oral stipulation of counsel, at the offices of Messrs. Hackley & Hursh, 804 Crocker Building, in the City and County of San Francisco, State of California, personally appeared before me, Eugene P. Jones, a Notary Public in and for the City and County of San Francisco, State of California, authorized to administer oaths and to take acknowledgments, etcetera, Arthur C. Waller, a witness called on behalf of the Plaintiffs.

Roy C. Hackley, Jr., Esq., representing Messrs. Hackley & Hursh, appeared as attorney for Plaintiffs; and Alfred C. Aurich, Esq., representing Charles M. Fryer, Esq., appeared as attorney on behalf of Defendants; and the said witness, having been by me first duly sworn to testify the truth,

Plaintiff's Exhibit No. 37—(Continued)

the whole truth, and nothing but the truth in the cause aforesaid, did thereupon depose and say as is hereinafter set forth. [593]

(It is further stipulated that the deposition may be taken pursuant to the Federal Rules of Civil Procedure.)

ARTHUR C. WALLER,

Called as a witness on behalf of Plaintiffs, being first duly sworn, testified as follows:

Direct Examination

By Mr. Hackley:

Q. State your full name, age, and residence address, please?

A. Arthur Channing Waller. My business address or home address?

Q. Your home and business address, please.

A. 8258 Fifteenth Avenue, Northeast, Seattle, Washington. Business address, care of Shell Oil Company, Incorporated, 1219 Westlake Avenue, North, Seattle, Washington; age 53; occupation, civil engineer.

Q. With whom are you connected in business?

A. Shell Oil Company, Incorporated.

Q. At the Seattle office?

A. That is my headquarters. I operate in other parts of the country other than just Seattle.

Q. What is your particular work with the Shell Oil Company?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Collaboration with engineers in connection with construction of roads, streets, airports—any place where pavement areas are placed.

Q. And do you primarily deal in asphalt products of the company?

A. I am in the Asphalt Road Oil Division.

Q. How long have you been with the Shell Oil Company?

A. Since the 1st of October, 1936. [594]

Q. Where were you first located when you were with them?

A. San Francisco.

Q. In the Asphalt Road Oil Division, then?

A. Yes, Asphalt Department, more correctly.

Q. And under whom did you particularly work when you first went to work for the Shell Oil Company?

A. J. F. McSwain, Manager, Asphalt Department.

Q. You worked out of the main office in San Francisco, did you?

A. That is right.

Q. At the Shell Building?

A. That is correct.

Q. Were you superior or subordinate at that time to Ray Harsch?

A. Subordinate. He is the Assistant Manager.

Q. Of the same department?

A. Asphalt Department.

Q. If I understand the ranking of that department, Mr. McSwain is the Manager of the department?

A. That is correct.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Mr. Harsch is his first assistant, is that correct? A. Assistant Manager.

Q. And then you came next, did you?

A. I wouldn't say. I never had my status exactly defined in that way. I worked under them.

Q. And reported directly to them?

A. That is right.

Q. Whom did you report to particularly, Mr. McSwain or Mr. Harsch? A. Mr. McSwain.

Q. How long did you remain at the San Francisco office of the Company in the Asphalt and Road Oil Department?

A. Two years, very close to the day.

Q. At the end of the two years did you leave for your present office at Seattle? A. Yes.

Q. What date exactly did you go to Seattle, do you remember?

A. I couldn't say exactly; about the end of October, 1938. [595]

Q. You would place it in the month of October, 1938 definitely, however, would you? A. Yes.

Q. Do you recall doing any work while you were with the Shell Oil Company at San Francisco with a product known as Core-Min-Oil?

A. Yes, I do.

Q. Do you recall working in that connection with Mr. Allen B. Ruddle or Mr. Lydell Peck?

A. I do.

Q. Both of them? A. Both of them.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. In your own way will you tell us just the complete history of your familiarity with the subject of Core-Min-Oil, when you first heard of it, under what conditions, and carry the story along? I would like to have it in your own words, if you will.

A. How brief or how elaborate do you desire?

Q. Very elaborate; just as thoroughly as you can remember it, with every detail that you can recall.

A. About the first month of 1938—January, 1938—Mr. McSwain mentioned to me that he had heard of a product owned by other parties which, combined with emulsified asphalt, could be used in making cores for foundry practice.

Q. Did he name these other parties?

A. Yes.

Q. Whom did he say those other parties were?

A. Mr. Allan B. Ruddle.

Q. Anyone else?

A. Not that initial time.

Q. Was anyone else present at this initial discussion with Mr. McSwain other than yourself and Mr. McSwain?

A. I don't recall; there might have been.

Q. You don't remember anyone, however?

A. No.

Q. Continue, please.

A. From time to time some mention was made of this medium, and in January——

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. By "medium" do you mean Core-Min-Oil?

A. Well, I did not [596] know it by that name at the time. It was a medium that was used in connection with foundry practice. A little later, in the month of January, I met Mr. Ruddle, was introduced to him by Mr. McSwain, and I think it was at the initial meeting that Mr. McSwain, and Mr. Ruddle, and Mr. Harsch, and myself went to Emeryville, to the Macauley Foundry, where there was explained to us by Mr. Ruddle the elementary procedure and foundry practice as far as cores were concerned, which was entirely new to all of us, as far as I know—to myself, certainly.

Q. Did Mr. McSwain indicate it was new to him, too? A. Yes, I believe so.

Q. And it appeared to be new to Mr. Harsch, did it?

A. It did. As say, to all of us—to myself, certainly.

Q. Continue, please.

A. At that visit Mr. Ruddle entered a side door, as I recall it, of the foundry. We did not go through the main office. He went directly to the rear of the building, where the coremaker's bench was located.

Q. This was the Macauley Foundry?

A. This was at the Macauley Foundry.

Q. Do you remember its address, Mr. Waller?

A. No, I don't.

Q. It is in Berkeley?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. In Emeryville, I believe.

Q. Continue.

A. The coremaker explained rather generally the function of cores, as far as castings were concerned, how they were made, and touched upon generalities and explained to us how they had to be baked after they were formed on the bench.

Q. At this time do you remember the name of that coremaker?

A. No, I don't.

Q. Would you know it if you heard it?

A. I doubt it.

Q. Was it Otto Gosch?

A. It was a peculiar name. I have great difficulty in hearing proper names for the reason that nothing [597] precedes or follows.

Q. I show you the name of Gosh, or some semblance of it, written here, "O-t-t-o G-o-s-c-h." Does that name sound like the name of the man you remember?

A. No, I couldn't say that I have any recollection at all of that name. There is a good deal of noise in the foundry and hearing in there in connection with the work is quite difficult for me, and a proper name is hard for me to get.

Q. You remember the continuity of a whole story but do not necessarily get isolated words, like proper names, is that it?

A. That is correct.

Q. Continue, please.

A. This man, however, was of large stature, rather heavy-set, as I recall it. All the procedure

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

being absolutely new and foreign to me, I probably only absorbed a slight continuity as to what it was all about, but this coremaker explained to us what cores had to do, what their function was, and mentioned that at that time Mr. Ruddle had a medium for use in making cores, although I couldn't say that he showed us any that he specifically stated were made with that medium. I think our visit lasted not to exceed thirty or forty-five minutes at the most. We walked around a little bit, stepping over this, that and the other, and generally following Mr. Ruddle around while he was explaining the different methods of procedure in the foundry.

Q. Foundry practice?

A. Correct. That is correct,—the pouring, the making of the molds, and the sand and the clay and the various ingredients that were necessary for the practice.

Q. You and the rest of these gentlemen, I take it, were getting the general foundation in core-making, is that correct?

A. I would say that was generally the purpose that was accom- [598] plished.

Q. That was, so far as you can recall, the purpose of the visit, was it?

A. Yes, substantially that is it.

Q. Did Mr. Ruddle show you any cores at that time made or supposed to have been made with Core-Min-Oil?

A. He showed us quite a few cores, and among

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

them there might have been one or two, or half a dozen that were specifically stated to have been made with that medium, but it does not stand out in my recollection as having been pointed out definitely to me.

Q. Mr. Gosch was present, or whoever this core-maker was, this foundryman, was present during all of this conversation, was he?

A. Yes, but he did not take part in it for the reason he was occupied with his daily work at his bench and he was turning out apparently, either on piecework or by the hour, a certain portion of work, and we would move away from him and then come back towards him. So consequently he could not be said to have an active part in all our conversation.

Q. Had you at this time become familiar with the word "Core-Min-Oil" as describing the Ruddle product?

A. I believe that came afterwards.

Q. You are not absolutely certain on that point?

A. No, I am not.

Q. You appeared a little indecisive, and I was not able to tell. I would assume that it was about this time that you learned of Core-Min-Oil as a name for the product?

A. Yes, it might have been mentioned to me verbally and not registered with me for the same reason that a proper name is difficult for me to

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

get; there is no connection prior to it or after it; it is all by itself.

Q. Until you see it written, it doesn't really register; is that about it?

A. That stamps it more definitely in my mind. The same with a name written, I will get a better idea of it. [599]

Q. I take it, Mr. Waller, that you are somewhat hard of hearing?

A. You are correct.

Q. I don't mean to impose on you, personally, in that connection, but I think under the circumstances it would be well if the record showed that fact.

A. That is perfectly satisfactory.

Q. You understand why I ask the question?

A. I understand.

Q. Did this foundryman or coremaker at Macauley's, whose name you can't now recall, discuss the merits of the Ruddie product as a core oil or for the making of cores or castings at the time of this first visit?

A. He might have at that time, but not knowing anything about any core oil, the significance of it was lost upon me if he did.

Q. You did not know what was a good core or a bad core, or a good core oil or a bad core oil, then, is that right?

A. No, I had no idea of it.

Q. Do you have any recollection now whether

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

the individual that you talked to seemed to be pleased with the Ruddle product or whether he indicated any reaction toward the product generally?

A. No. If I don't recall that he even made mention of it, I couldn't recall naturally whether he had any enthusiasm about it.

Q. That is it. I don't know what may have been the situation; I am only trying to develop the facts there. You say this visit lasted thirty or forty minutes? A. Yes.

Q. And what took place after that?

A. I believe we got into the car and came back to San Francisco.

Q. All of you? A. All of us.

Q. Did you continue any discussions about the Core-Min-Oil product after you came back to San Francisco?

A. I believe we [600] had all seen so much that was absolutely new to us that we were discussing in general a variety of the scenes we had observed.

Q. You were still learning coremaking practice, literally, were you—getting a foundation, so to speak? A. That is correct.

Q. Now, what is your next recollection of the connection of yourself with the subject of Core-Min-Oil? Just continue your story.

A. Probably after a lapse of several days—I couldn't say how long a time intervened—it was brought up in discussion again at the office.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Who was present?

A. Mr. McSwain and myself, and possibly Mr. Harsch, also; I don't recall. Reference was made to the things we had seen at the foundry, and as I recall it I met Mr. Ruddle again, though just exactly where I don't recall.

Q. What was the substance of this discussion between Mr. Harsch, Mr. McSwain, and yourself?

A. The general idea was that as emulsified asphalt was one of the component parts of Mr. Ruddle's Core-Min-Oil, it provided a possible outlet for emulsified asphalt, which the Shell Oil Company manufactures.

Q. And your company was naturally looking for large scale commercial outlets for its product; is that correct?

A. We were looking always for an outlet for our manufactured product.

Q. What else do you remember now about that general discussion?

A. There was nothing specific that stood out in any of these discussions; they were so numerous; they might last a few minutes; they might occur at a lunch hour, and there is nothing that makes any one of them stand out definitely in my recollection.

Q. What I am really more interested in than either the time or the place, specifically, in the discussion is to get the general [601] picture of

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

the development of interest by the Shell Oil Company in the subject of Core-Min-Oil, and what your connection with that was, so you can bear that in mind as you go along. Now, continue, if you will, in the general narrative.

A. I am unable to say definitely just when the next meetings occurred, but from time to time, several different times, I went over to the Macauley Foundry in company, always, with Mr. Ruddie; sometimes there were others, sometimes not. Mr. McSwain would ask me if I would accompany Mr. Ruddie. And through talking with him on the way over, on the way back, and at the foundry, picture gradually unfolded before me of what the purpose of the whole thing was, and how this solution, then known as Core-Min-Oil to me, had its place in the foundry picture. I couldn't say how many times we went over, but each time I would get something more in the way of a completed picture of the procedure.

Q. These visits successively to the Macauley Foundry, that you speak of, occurred when? In February, 1938, something like that?

A. Well, they occurred over January and part of February. They became less frequent at the Macauley Foundry for reasons that I don't recall now. The quarters were somewhat cramped, there. The lighting never impressed me as being a desirable place for any research; it was kind of dark. I think principally we went there because Mr. Ruddie

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

kept the ingredients of his solution there, which he would draw off when we made a visit and take either with him or use in any other way that he had need of.

Q. What was done at these specific visits? Were cores prepared from Core-Min-Oil prepared at that time?

A. I never recall seeing any cores made at the Macauley Foundry where I know that [602] Core-Min-Oil was incorporated in them.

Q. You don't recall any? A. No.

Q. You recall that Core-Min-Oil was there and that it was used, but you don't remember seeing the cores; is that correct?

A. I wouldn't have known whether it was being used or not; I had no way of finding out.

Q. Well, was it represented to you by Mr. Ruddle that Core-Min-Oil was being used?

A. No, I don't think it was. I think we were still talking over the intricacies of coremaking and reinforcing with wires—what a core had to be to be a core.

Q. You were roughly in the educational phase?

A. Still very definitely in the educational stage.

Q. When did you change over, if you did change over, from an educational phase, to a study of the making of cores with Core-Min-Oil?

A. I was not so interested in the making of cores with Core-Min-Oil as I was in the possibilities of an emulsified asphalt outlet.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Of course, Core-Min-Oil presented that possibility, didn't it? A. It seemed to, definitely.

Q. A large proportion of Core-Min-Oil, as you later came to learn, is emulsified asphalt?

A. Well, I wouldn't say that it was a large proportion, but there is a proportion of it.

Q. What proportion would you say, as you remember it?

A. I wouldn't care to quote from memory as to what the proportions were.

Q. No, but can you give me an approximation? I am not trying to hold you down to some exact figures unless you happen to recall; but was the asphalt emulsion content by volume more or less than one-half of the total of Core-Min-Oil, as you remember it? A. I would say less. [603]

Q. Than one-half? A. Yes.

Q. Was it more or less than one-fourth of the total volume?

A. If you would like to know, you can find it in my handwriting in those notes.

Q. You have notes which indicate precisely the formula of Core-Min-Oil as you came to understand it?

A. That was the formula that we used later in making cores with Core-Min-Oil as noted by me; but I don't recall at the present time the amount.

Q. You have indicated some notes (handing papers to witness). Will you state what these notes are that you have produced, just broadly?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. These notes were made after a considerable period of time from the particular date that we are discussing at the present time. These were made in June, and we were talking about January and——

Q. In continuity we are nowhere near that date yet, are we? A. That is correct.

Q. But you happened to refer to the notes, and I thought we would identify them. We will come to them later in your story.

A. I identify these as my notes. There is the proportion of emulsified asphalt (indicating).

Q. You have indicated a formula on these notes on the reverse side of the first sheet.

A. That is correct.

Q. Will you read that formula into the record, please?

A. Note dated June 10, 1938. "All mixes made as follows: Sand, dry, 93%; Solution 4½%; Emulsified asphalt 2½%."

Q. The word "e-m-u-l" refers to emulsified asphalt, does it?

A. That is my abbreviation for emulsified asphalt.

Q. And solution refers to what in the formula?

A. The solution refers to Mr. Ruddle's solution in combination, the proportion [604] of sodium silicate that he made up.

Q. Sodium silicate is included, then, in the item marked "Solution"? A. That is correct.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. The word "Solution" or the product which you have marked "Solution", plus the product marked "Emulsion" or "Asphalt emulsion," in combination form what you knew as Core-Min-Oil; is that correct? A. Yes, that is correct.

Q. Asphalt emulsion represents approximately one-third of the total volume of Core-Min-Oil, if I judge this formula correctly; is that it?

A. No.

Q. Correct me if I am wrong.

A. That is right. Not quite one-third. "Approximately," you said. That is right.

Q. I said "approximately one-third."

A. Of the solution, itself.

Q. That is right, of the combination.

A. That is right.

Q. So that we have the record clearly, I may have confused you there a little bit: Core-Min-Oil comprises, we will say, 4.5 parts solution and 2.5 parts asphalt emulsion; is that correct?

A. That is right.

Q. Making a total of 7 parts?

A. That is correct.

Q. Of which 2.5 parts are asphalt emulsion?

A. That is correct.

Q. That 2.5 parts is approximately one-third of the total of 7 parts of Core-Min-Oil; is that correct?

A. Approximately.

Q. So, as you understood it, the asphalt emul-

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)
sion provided about one-third of the total volume of
Core-Min-Oil? A. Roughly, yes.

Mr. Hackley: I will offer the notes identified
by the witness as "Waller Deposition Exhibit 1,"
and ask that they be so marked.

(The 7 pages of notes were marked "Waller
Deposition Exhibit 1.") [605]

Q. Now, let us go back to where we were in
January of 1938 and continue with the general con-
tinuity of your narrative, please.

A. It appeared sometime in February, 1938, to
the best of my recollection, that it would be better
to transfer our further experiment and observation
to the Vulcan Foundry in Oakland.

Q. This was a decision made by Mr. McSwain
and yourself, was it?

A. No, I could not say that it was. It was
simply told me that that was where we were going
to work, and I never bothered to find out who made
the decision.

Q. Who told you that?

A. I do know that Mr. Lydell Peck was a
friend of Mr. Harold Martin, the Manager of the
Vulcan Foundry, and I was introduced, as I recall
it, to Mr. Martin by Mr. Peck.

Q. Mr. Waller, who was it that told you the
work was to be transferred to the Vulcan? You
said, "It was told to me." Now, I would like to
identify that if we can.

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A. I couldn't specifically state.

Q. Somebody in the Shell Company?

A. It might have been in a group conversation with Mr. Ruddle and Mr. Peck and Mr. McSwain and myself. There were frequent meetings where we would—not formal discussions, quite the reverse, and things might have been mentioned there that such and such would be a good idea.

Q. As I understand from the way you have described this, after the first getting-acquainted meetings, this was a very close knit arrangement between yourselves, on the one side, and Mr. Peck and Mr. Ruddle, on the other; you worked closely together; you had many conferences, and they were highly informal and there was a wide exchange of information and ideas. I am trying to get a general picture on the record of the relationship [606] there.

A. I wouldn't say that it was close-knit, exactly, as much as it was informal.

Q. There was a very ready and free exchange of information, was there not?

A. We were seeking ways and means to determine the possibilities that we each individually were interested in,—ourselves in the outlet of emulsified asphalt, and Mr. Peck and Mr. Ruddle, in the successful placement of their medium in foundry practice.

Q. Incidentally, what did you understand to be the object of Mr. Peck and Mr. Ruddle in coming

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to the Shell Company with this product, Core-Min-Oil?

A. I presume that they felt that as long as emulsified asphalt was a necessary component part of the design, that it would be of advantage to seek a connection with a manufacturer of that product. That appears to be perfectly logical to me.

Q. And your company, being a large-scale manufacturer of asphalt emulsions, interested in the sale of those products——

A. That is correct.

Q. (Continuing) ——in as much volume as possible, seemed a perfect and natural set-up there; is that correct?

A. That is right.

Q. And, of course, you were aware of the fact, or your studies developed the fact, I assume, that the market for core oil in the United States is a tremendous one?

A. That is correct; that fact——

Q. And a superior core oil then would be a very desirable product, generally?

A. If it possessed something that the others did not have, which made it desirable, it most certainly would be.

Q. That is correct. And if that product utilized an asphalt emulsion, it would be highly desirable to your company to market [607] it?

A. That is correct.

Q. Or, for that matter, any other product that your company was manufacturing?

A. Yes, any petroleum products. We are interested in marketing all of them.

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Q. It wouldn't matter to you whether it happened to be asphalt emulsion or some other petroleum product, as long as it was a product of your company, and a large market was present?

A. That is right. My interest was chiefly because it was asphalt and I was employed by the Asphalt Department.

Q. In fact, you weren't even concerned necessarily with the fact that it was an emulsion; the asphalt product provided a desirable outlet from your angle; is that correct?

A. That is right.

Q. Continue, then, with the general story. You said that it was decided,—apparently it was a consensus of the opinion of all of you,—to move over to the Vulcan Foundry and do this work?

A. That is right. At the Vulcan Foundry more spacious conditions existed, and we were able to carry observations and studies as to foundry procedure in a more satisfactory manner. A core-maker was generally assigned to the purposes of Mr. Ruddle in the making of cores, which is a highly specialized manual operation, and the foreman, named Leas——

Q. Is that Harry Leas?

A. Harry Leas, was very helpful in every way, as was Mr. Martin.

Q. That is the same Mr. Harold Martin you referred to? A. That is correct.

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Q. What is his capacity with the Vulcan Foundry, do you know? Is he general manager?

A. I would assume that he is general manager, as he was apparently No. 1 man in the office. All things were referred to as coming to or from Mr. Martin. [608]

Q. By the way, what was the approximate date when the transfer was made over to Vulcan?

A. I would hazard a guess of the early part of February.

Q. 1938? A. '38.

Q. Continue, please.

A. It appeared that Mr. Ruddle, in making cores in the past at Macauley's, or wherever else he had made them before our entry into the picture, had experienced difficulty in that some of the cores were satisfactory and some were definitely not. And this unsatisfactory condition was explained to us as consisting of a friable or soft condition after they were removed from the baking oven.

Q. Explained to you by whom? By Mr. Ruddle?

A. By Mr. Ruddle.

Q. If I understand you, the results under apparently identical conditions were inconsistent?

A. That is correct.

Q. And the inconsistency rested in the fact that some cores were sound and solid, hard, while others had soft spots, or, as you put it, were friable?

A. I don't want to get a misconception of "soft spots." What I meant by "soft" was they could

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be easily—the crust could be easily broken through by pressure; they couldn't stand handling.

Q. You are indicating punching with the finger, for example.

A. Or a pencil point, or anything of that sort, whereas the part that was sound would withstand considerable pressure. But the softness does not indicate pliability; that is what I meant.

Q. Yes, I think I understand you.

A. It would be crusted.

Q. If I understand you, many of the cores came out with a hard over-all surface which resisted considerable attempts to penetrate it or puncture it?

A. That is right.

Q. Then there were other cores, apparently made under like conditions, from the same product or products, which were soft [609] and puncturable; is that what you mean?

A. That is right.

Q. Mr. Ruddle described that problem to you; is that correct?

A. At the very inception of our association with him.

Q. While you were still over at the Macauley Foundry? A. That is right.

Q. In January, 1938? A. That is right.

Q. Continue.

A. He explained this as an unpredictable factor.

Q. Something that happened and he couldn't explain why; is that correct?

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(Deposition of Arthur C. Waller.)

A. That is right.

Q. He was perfectly frank with you about it, however?

A. Oh, yes; and it appeared to us that that was the main difficulty that stood in the way of the successful adoption of Core-Min-Oil as a standard foundry medium, as far as we were able to tell.

Q. The cores, in other words, which were sound and had this firm crust, unpenetrable crust on them, appeared to you to be—by “you” I mean you and the others of the company working with you—to be satisfactory cores; is that correct?

A. We were in no position to judge at any time. We always took cores to the experienced men to get an opinion as to whether they were passable, or not.

Q. And their opinion was what, now?

A. Well, I never took any of those early cores that Mr. Ruddie told us about to verify what he said to anybody, to secure an opinion. His word was sufficient to us, that there was a difficulty there that existed, which he had frankly stated, that as they came out from the oven, from visual inspection, they were largely O.K., but when they were touched, or pressure was placed upon them in slight degree some would collapse. That appeared to us to be the difficulty which had to be overcome in order to arrive at a correct basis to go ahead with the promotion of the Core-Min-Oil. [610]

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Q. You mean by "promotion" the sale of the product? A. That is right.

Q. Continue, please.

A. We were interested in the sale of emulsified asphalt more than anything else.

Q. If that sale could be stimulated by tying it to the Ruddle set-up as a Core-Min-Oil, or whatever you wanted to call it——

A. An additional outlet was supplied.

Q. (Continuing) ——that satisfied your problem?

A. That was our idea. The work that ensued at the Vulcan Foundry for the next period of several weeks was to determine, if possible, what caused this inconsistency of the cores in the baking. And to that end Mr. Ruddle and myself made repeated trips back and forth from the Vulcan Foundry. And though I may have neglected to say so, I was assigned by Mr. McSwain at a date I don't recall at the present time, to give my entire time to this particular job.

Q. Do you remember when you were assigned to the task?

A. Oh, I would guess about the middle of February.

Q. 1938?

A. 1938. All of the dates that I have reference to in connection with my work on Core-Min-Oil are encompassed in 1938.

Q. We can accept that, then, as a general state-

Plaintiff's Exhibit No. 37—(Continued)
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ment for all of your testimony, unless you indicate differently? A. That is correct.

Q. Thank you. Continue.

A. We had a coremaker named Manuel,—I don't know his last name—more or less assigned to our requirements.

Q. Who is "we"?

A. When I say "our" I include Mr. Ruddle and myself, as we were there practically in each other's company, as far as I know; we were there together most of the time. I [611] know I very rarely went there without Mr. Ruddle at that particular time. In order to discover or to more fully explore the possibilities as to why these cores were failing, which definitely appeared to be in the baking process, cores were made by the coremaker Manuel **and left in the lower half of the mold, or the drag,** and transported over to Martinez where we have an asphalt laboratory at the Shell Company's refinery. And there we attempted to bake the cores as nearly as possible at the temperatures that had been given to us as prevailing in foundry procedure.

Q. You say given to you—given to you at the Vulcan Foundry by foundrymen?

A. Yes; also in any hand book or anything of that sort that we had recourse to regarding foundry practice.

Q. Do I understand that your company, in all this investigation, attempted at all times to follow best foundry practices as could be determined from

Plaintiff's Exhibit No. 37—(Continued)
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a study of the foundry practice in hand books and in the literature wherever you might have information that you considered to be authentic; is that correct?

A. Oh, yes, that was basically our idea. I don't remember the name of the organization, but we even at a later date secured data as to how to test cores for strength and built pressing apparatus at our laboratory in accordance with, I think it is, the American Foundrymen's Association standards.

Q. You obtained the standards from the Association?

A. The standards for test adopted by that Association.

Q. And you set up testing apparatus at the Martinez laboratory, do I understand?

A. That is right.

Q. You were about to describe taking some of the cores prepared over at the Vulcan Foundry up to the Martinez Laboratory? A. Yes. [612]

Q. And baking them there to attempt to find a solution to this problem of softening or inconsistencies in the cores? A. That is right.

Q. Continue with that, please.

A. Care had to be taken in driving back that undue jolting was not suffered that would break the cores, which were in an unbaked condition, and necessarily easily dispersed.

Q. They were just pieces of molded sand at that point, weren't they?

Plaintiff's Exhibit No. 37—(Continued)
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A. Well, they were still in the lower half or drag which they are always baked in.

Q. Which acts as a supporting measure, of course?

A. They cannot be baked any other way. They had to be taken over in the drag and then baked in that form. And it was noted that the first few batches of a few cores each of small dimension were satisfactory, that were made at Martinez.

Q. You baked them in a different type of oven over there than you did at Vulcan?

A. Yes, we baked them in an electric oven. That has the indirect heat, rather than direct or ordinary open-flame gas-fired oven such as existed at both Macauley's and Vulcan. The significance of the indirect fired oven was not immediately attributed as a cause, and later we constructed a gas-fired oven at Martinez out of sheet metal, in order to duplicate as nearly as possible the condition of ovens at Vulcan. And it was found then that we could get undesirable cores from time to time about in the same proportion as we did over at Vulcan.

Q. Who worked with you over at the Martinez laboratory—with Mr. Ruddie and yourself?

A. A man by the name of Earl Spotswood.

Q. Anyone else?

A. I think a man by the name of Warren. [613]

Q. You don't recall anyone else?

A. No, I do not. There were other helpers in

Plaintiff's Exhibit No. 37—(Continued)

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the laboratory, but those two men were the 1 and 2 men.

Q. Was Mr. Snyder over there, do you remember?

A. Mr. Snyder was there, but I think that he had a position at that time which took him out of the laboratory,—I recall going to his office in a building other than the laboratory,—so he collaborated with our procedure.

Q. That is Mr. L. J. Snyder, isn't it?

A. I couldn't tell you his initials.

Q. Then in the course of these comparative tests between direct and indirect fire ovens you and Mr. Ruddle observed that when the core was fired in an indirect fire oven this inconsistency in the surface impenetrability or toughness of the core did not occur, if I understand you.

A. I don't think Mr. Ruddle and myself observed it until it was called to our attention by Mr. Spotswood.

Q. If I get the picture, you and Mr. Ruddle were following this work, but Mr. Spotswood, if I understand you, is the one who first made the suggestion that that might be the solution to the problem?

A. That is right. But we did not remain at the laboratory over any protracted length of time. Therefore, we were not a party to the procedure that occurred there, where the difficulty arising from open or gas-fired direct heat was determined

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to be the attributable cause of the friability of the cores.

Q. Mr. Spotswood was directed by you, representing the company, I take it, to carry out these tests at Martinez?

A. No, I had no position of direction there. Mr. Spotswood was probably directed by Mr. McSwain, or from Mr. McSwain through [614] whoever his immediate superior was at the refinery, to undertake the work. I gave no direction.

Q. Who instructed you to take the cores up to Martinez to Mr. Spotswood?

A. I don't think anybody did. I think that was of my own volition.

Q. You did not go to Mr. Spotswood without Mr. Spotswood being forewarned in some way that he was to cooperate with you, did you?

A. Oh, we knew that we would have the cooperation, because the asphalt laboratory at Martinez, although under the direction of the manager of the refinery, is definitely part of the Asphalt Department. The Asphalt Department brought it into being.

Q. You had full authority to carry out all this work?

A. It is all a portion of our Asphalt Department.

Q. That is the picture I wanted to get there. I wasn't sure just how you were set up.

A. Though they do other work other than on

Plaintiff's Exhibit No. 37—(Continued)

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asphalt, it was primarily for testing road materials and asphalt in combination, that laboratory was created.

Q. Do you recall whether or not Mr. Spotswood had any familiarity with the Core-Min-Oil prior to the time that you took these cores up to Martinez?

A. No, he had no connection, had never heard of it before, as far as I know.

Q. Do you remember approximately the time in February, 1938, when you took the cores up to Mr. Spotswood?

A. No, I don't recall any particular conversation.

Q. No; I mean do you recall the date particularly?

A. No, I don't recall the date, either.

Q. You would fix it as being in the month of February; is that it?

A. Mid-February, I would say, would generally encompass it.

Q. Now, if I understand you correctly, Mr. Spotswood made the ob- [615] servation to you—or perhaps to you and to Mr. Ruddle; you can clear that point up for me—that when these cores were fired in the electric or indirect fire oven this surface softening did not occur; is that correct?

A. That is right.

Q. How long after he started the tests at Mar-

Plaintiff's Exhibit No. 37—(Continued)
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tinez did Mr. Spotswood make that observation to you, do you remember?

A. It seems to me it was in the latter part of February.

Q. After you built the direct fire experimental oven at Martinez?

A. Oh, yes, we couldn't make the determination until we had the two side by side.

Q. You had a comparative test?

A. Then we had the comparative test. And then in order to definitely prove it, we brought a tank of carbon dioxide and piped carbon dioxide into the direct fired oven and spoiled the cores in there, which definitely proved the presence of carbon dioxide gas was the difficulty that was causing the cores to fail.

Q. Do I understand, then, that in a direct fire oven the open fire generates carbon dioxide which is exuded into the presence of baking cores?

A. Apparently that is the case.

Q. And that carbon dioxide in some way reacts with the chemicals in the product forming the core to cause this softening?

A. That is my assumption.

Q. That is your understanding of it, is it?

A. Yes.

Q. And so far as your judgment is concerned, that appears to be the problem that was created?

A. That was our chief problem to overcome, as we envisioned it at that time.

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Q. And that problem did not exist when you operated in an indirect fire oven? A. No.

Q. An indirect fire oven, if I understand you, could either be an electric oven or a gas oven where the cores were enclosed away [616] from the flame, is that correct? A. That is correct.

Q. So long as you prevented the carbon dioxide generated by the flame from getting into the presence of the core, you overcame the problem of surface softening, or friability?

A. That is correct.

Q. Is that what you described it?

A. That is correct.

Q. That is the trade term, is it?

A. That is correct.

Q. Did you experiment with overcoming the problem of surface softening or friability by putting a hood or cover over the core in a direct fire oven during the baking?

A. We tried a number of experiments to see if we could adapt a procedure which would permit the successful making of a core in a direct fired oven. Hoods were made which were placed over a core and allowed to remain just free of the rack on which they rested. They were baked that way. Also, after the fire was turned out we tried to utilize the radiating heat from the pre-heated oven to meet our requirements,—anything that was feasible to get away from the presence of gas generated by combustion.

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Q. And when you eliminated, if I understand you, gas from contact with the baking core your problem was non-existent?

A. That was what we felt at that time; that was our chief difficulty.

Q. That difficulty was definitely overcome when CO₂ gas was prevented from getting access to the baking core; is that correct? A. Yes, it was.

Q. Now, continue with the general continuity of your story. I think I got a little ahead of the picture to some extent. After you performed these tests at the Vulcan foundry, and the additional tests up at Martinez, at which this determination was made that the presence of carbon dioxide, the product of [617] combustion, would produce the surface softening of the core, what was your next work in connection with Core-Min-Oil?

A. To see if we could put it through a foundry in regular procedure.

Q. Tell us just what you mean by that.

A. Well, these foundries—the Vulcan Foundry, to be specific, was occupied with contract work. Therefore, our opportunity for experimentation had necessarily to fit in with the least inconvenience possible to the people's occupation and the contracted work, and therefore it was impossible to have the utility or have the use of their ovens at such a time as we wanted, or turn off the heat when we would particularly choose. So we brought an electric oven—a small electric oven, from Martinez

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and set it up at the Vulcan Foundry, which, while it was not large enough to give us anything in the way of a sustained run, permitted experimentation without the necessity of carrying cores from Oakland to Martinez. Then it appeared that it might be advisable to see if the Vulcan people would agree to having their ovens changed so that an indirect heat could be enjoyed for their service as well as ours, and we even went so far as to get estimates from sheet metal men as to the probable cost entailed.

Q. What was the approximate time of all of this? A. Time?

Q. Yes. When did this occur? A. Date?

Q. Yes, the bringing of the little electric oven to the foundry.

A. I would say March, possibly over into April.

Q. It was a continuous development, was it?

A. The picture continued, yes, from a very casual sort of a beginning until the possibilities—we figured that the difficulty existed of this baking trouble, and when we had isolated it, then it was felt that the only way that the procedure could be proved was to [618] put it straight through the foundry as standard procedure.

Q. Before we go into that, there was one other point: As I understand it, the cores that were made and baked out of the presence of CO₂ gas developed or generated in the combustion were sound, tough-surfaced cores; is that correct?

Plaintiff's Exhibit No. 37—(Continued)
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A. They had the necessary resistance for foundry procedure to go ahead to make castings.

Q. For casting problems? A. Yes.

Q. Were they using for castings?

A. Which cores are you referring to?

Q. Cores made in the manner we have just described.

A. With Core-Min-Oil?

Q. With Core-Min-Oil, yes.

A. Occasionally we had several cores incorporated in molds and castings were made therefrom.

Q. At the Vulcan Foundry?

A. At the Vulcan Foundry.

Q. What type of castings, do you remember?

A. Nordstrom Valves.

Q. That is the Merco-Nordstrom valves?

A. There are Nordstrom valves of different sizes, and they go by numbers from very small, a few inches in size, up to maybe 15 or 18 inches. They are a standard valve, and apparently the Vulcan people had a contract to make them, and that was what our work consisted of, was making cores along those valve sizes.

Q. This was in February, was it?

A. No, I would say this was later than February. This was after the CO₂ difficulty had been definitely found, which I said was late in February, and I would say we were carrying on into March and April now.

Q. After you had isolated this problem and solved it as you have described, then you pro-

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ceeded to make some castings, as I understand you.

A. Yes, we had tried at various times [619] to make castings, because unless they stood up under the heat of casting they were obviously no good to us.

Q. How did they stand up? Tell us about that.

A. The only way that a core has to stand up is to hold its shape until the molten mass has cooled, and then to be removed without undue effort.

Q. And these cores made of Core-Min-Oil baked out of the presence of CO₂ gas performed that function, did they?

A. They made successful castings from them.

Q. Did the foundryman at the Vulcan Foundry, like this man Manuel you referred to, express himself as to whether the cores made with Core-Min-Oil and the castings made from those cores were good, bad, indifferent, or what?

Mr. Aurich: I object to that as calling for hearsay.

A. I don't think that the coremaker ever passed an opinion on the finished casting, to my recollection.

Mr. Hackley: Q. Did he pass it on the cores?

A. He did, however, on the cores.

Q. And what did he say to you in that connection?

Mr. Aurich: The same objection.

Mr. Hackley: Q. Was this Manuel?

A. Manuel.

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(Deposition of Arthur C. Waller.)

Q. Tell me what he said about the cores.

Mr. Aurich: The same objection.

A. He was somewhat reserved. As I recall it, he was neither enthusiastic nor the reverse. We had some difficulty with the stickiness of the sand mix, which was slightly different from their usual mix, and all the coremakers made reference to the fact that it felt different in their hands, but that did not necessarily mean that they did not approve of it. They are experts in that when they look at a core, a finished core that [620] they have made, they evaluate it along the lines of cores that they have had experience with, and it has to be precise or they won't pass it.

Q. It is either perfect or rejected, one of the two, in their opinion; isn't that it?

A. That is correct; there is no half way.

Q. And they accepted these cores made with Core-Min-Oil?

A. Not all of them; some of them.

Q. What ones did they reject?

A. Those that would stick in the upper half of the mold, or what is called the cope.

Q. That is the cope of the core box?

A. The cope is the upper half of the mold, the drag being the lower; and the material, the sand,—any core sand is put in there, pressed into the interstices of the drag, and then a sufficient amount is put in there so that when the upper half comes down and fits, it compresses it. Then it is pounded

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with a mallet in order to settle the grains, and the upper half lifted off. If there is any adherence due to stickiness or any other factor, it automatically removes a portion of that core and then it has to be thrown out.

Q. Did that sometimes occur, do I understand, with Core-Min-Oil? A. Yes, it did.

Q. Not all the time, or anything of that sort?

A. No; intermittently.

Q. Did you discuss castings which were produced from cores made of Core-Min-Oil with anyone at the Vulcan Foundry? A. Yes.

Q. With whom?

A. We talked to Harry Leas, and a pouring boss by the name of Sheehan, and they looked these castings over and pronounced them satisfactory.

Mr. Aurich: I move to strike out the latter part of the witness' answer as to what Mr. Leas and anyone else may have said [621] at the Vulcan Foundry as being hearsay.

Mr. Hackley: Will you continue now with your general narrative, Mr. Waller, please?

A. Mr. McSwain felt that it was absolutely necessary that the procedure and the use of Core-Min-Oil be definitely proven by foundry practice. In other words, it was his idea that before we could arrive anywhere in the matter of sales of any such product, we would have to tell a potential purchaser that it had been used definitely in some foundry as standard procedure, and then after the friability

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due to carbon dioxide gas had been discovered and put in its proper place——

Q. Isolated?

A. That is correct—our procedure then was to endeavor to have the material Core-Min-Oil used in the foundry if it was in any way possible; but the matter of the storage of mixed sand—by that I mean core sand mixed with the necessary ingredients that would permit an operator to make a core from it—had to have certain storage value or life.

Q. The mixed product had to have a working life of a given length of time; is that correct?

A. Yes, to a certain extent. It had to last during a day without hardening unduly. The linseed oil which is used is usually covered up with a piece of heavy burlap sacking to prevent aeration. It was found that the product—the sand mixed up with Core-Min-Oil—had a shorter life period; in other words, it got sticky and harder due to aeration. It presented difficulties in that respect which prevented further consideration of putting it through the foundry as a standard core binding medium in lieu of linseed oil.

Q. What was then determined to be the approximate working life of Core-Min-Oil mixed core sand?

A. It wasn't by any tech- [622] nical means; it was by trial and error. In other words, if it felt hard or resistant in the coremaker's hands, he had

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a tendency to discard it as it had passed its pliability stage.

Q. About how long did it remain exposed for example to the air before it reached that stage that you have just described, before it was rejected?

A. My observation was that it was variable, due largely to the humidity present in the air. A cloudy day, cool—relatively cool—we enjoyed a longer period of workability than low humidity and warm circulating air.

Q. Did covering the mixed core sand with a damp burlap sack, or something of that sort, help to preserve the working life for a longer time?

A. Yes, we utilized the covering exactly the same as the procedure had with the other, accorded it exactly the same protection.

Q. As with linseed?

A. As with linseed. But the difficulty when the mixing man or the individual whose duty it is to make up the day's supply of sand—it was obvious that we couldn't get enough material through and preserve it, and furthermore, we were in difficulties as to the correct proportioning.

Q. When were these problems recognized, in point of time?

A. They grew as time went on. When we got out of the experimental stage of individual cores in an electric oven and the horizon widened out a little bit as to commercial application, these various problems became more acute; we were aware of

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them; we hadn't been in the light individual experimentation previously.

Q. This, then, would be along in the latter part of March, or something like that?

A. Oh, I would say we had gone past that into April.

Q. Down into April, now.

A. There was a period, there, you [623] see, where there was a lot of experimentation done over there at Vulcan. It sounds as though it should have been found out next day, but where you take trial and error, there are very many avenues; you have to run down blank leads in order to eliminate them, and that took quite a little time.

Q. Continue with your general narrative, please.

A. My time was completely taken up during April and May in the work of following through with the various experiments or trials that we were undertaking to get this into a commercial bracket where it would be used in lieu of the regular linseed oil. And samples of Core-Min mixed sands were taken over to Martinez and there were baked in ovens in the form of cubes, bars, small beams—various things that an uninitiated man could mold—and tests were undertaken there to determine the length of time necessary to bake satisfactory cores, in order to determine a saving that might be enjoyed through the use of this medium.

Q. Saving in baking time?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Yes, a saving in baking time would permit a more rapid sequence of use of the ovens and thereby increase production.

Q. Your per-core-cost would be lowered?

A. That is right.

Q. Directly as you saved in time of baking of the core; is that correct? A. That is right.

Q. Do I understand that cores made with Core-Min-Oil baked more rapidly?

A. I believe that that was definitely determined, though I don't remember the exact saving time in per cubic inch, or whatever the unit was upon which they were evaluated.

Q. Everything else being equal, a core made with Core-Min-Oil baked in less time to the same unit—— A. That is correct.

Q. ——than with any other known core oil?

A. Any other core oil [624] that I had anything to do with.

Q. By the way, what core oils did you have anything to do with?

A. Only linseed oil, although there was an oil called Houghton Oil. I never saw any cores made of it. I saw a sample of it and had my hands in it. I believe Mr. Ruddle had some of it, and that is where I saw it. And at another foundry I believe I saw some fish oil or some animal oil. But as far as my actual experience in a foundry is concerned, I had no experience in the making of cores wherein

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

anything but linseed oil was used, to my knowledge, other than Core-Min-Oil.

Q. Your comparisons, then, with standard foundry practice, or standard core oils as against Core-Min-Oil are based, then, on Core-Min-Oil as compared with linseed oil; is that correct?

A. That is correct.

Q. Is linseed oil the same as Linoil?

A. I couldn't say.

Q. Do you know of a product called Linoil?

A. No, I do not. I remember hearing it used, but I don't remember now the definition that went with it.

Q. It may have been just another name for linseed oil?

A. It might have been an abbreviation.

Q. You were describing these comparative tests made up at Martinez, baking time determinations or whatever you call them.

A. Strengths under stresses, loadings whereby a core was supported at either end and a load applied in the middle and recorded as the strength of the core per unit.

Q. This work was done when, Mr. Waller?

A. I did not have anything to do with it directly.

Q. Was this done by Mr. Spotswood?

A. But I heard of it, saw them when I went to Martinez, observed the work going on there, and I would say it was probably in May and possibly car- [625] ried on into June. I couldn't say exactly

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(Deposition of Arthur C. Waller.)

how long they worked at it or when they abandoned it, or what they did; I just know that the materials were there and the apparatus was there.

Q. That was the apparatus that you referred to a few moments ago, developed to perform tests corresponding to the standards of the American Foundrymen's Association? A. That is correct.

Q. That work was done under the direction of Mr. Spotswood, was it?

A. That was done at the laboratory under Mr. Spotswood.

Q. And reports on it came to your attention, I suppose?

A. Yes, they were discussed in my presence, although I do not think formal reports were ever submitted to me. I had access to the information and informally observed it—read it.

Q. What were the general findings resulting from those tests at Martinez?

A. I don't think that they were,—to my recollection they were not correlated definitely with other procedure, although there were definite figures given as to times necessary for the baking and the strength. I recall that there were such things, but I don't recall what they were.

Q. Do you recall how the tests of the results obtained with Core-Min-Oil compared with results under like conditions with linseed oil made cores?

A. Do you mean as to the strength of the core?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Strength, for example, yes.

A. Well, I think that they were—while I don't remember the actual figures, I think that they were of sufficient worth to place the Core-Min in a position that it was fully the equal as far as strength was concerned of linseed.

Q. What other types of tests were performed of a comparative nature, do you know?

A. I believe that they changed the grading of the sand—by “grading” I mean the particle size of the [626] individual grains—to ascertain if, by making a more porous core, the heat could go more quickly into the depths of the object and thereby dry out rather than having a dead sand which would take a longer time to drive the moisture out of the core and make it a wholly baked article.

Q. The thought being to lower the baking time of the core?

A. That is right,—the idea being to make a cube or a series of cubes all out of the same batch of sand and Core-Min-Oil, and then penetrate into them, taking out different ones at different times out of the oven, to find out how rapidly the heat made itself manifest in the interior of that cube, and the point of complete baking,—from which a graph was made to show baking time in proportion to volume.

Q. To develop an optimum formula for baking and core-making; is that correct?

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

A. I don't think it had got to a point of formula. We were trying to get data.

Q. Do you recall what results were determined in that data?

A. No, I don't. I didn't carry through far enough; I was taken, reassigned to other work before anything of that nature reached a completion or a culmination, and I never heard——

Q. Was that reassignment the transfer to Seattle that you spoke of? A. That is right.

Q. In October?

A. No, no, I was—I correct that. It was about mid-June that I took up my regular work of collaboration with field engineers and dropped my work with Core-Min-Oil and foundry practice, and it was not until the last of October that I left for Seattle.

Q. Mid-June you were transferred to field work, you say?

A. Picking up work that I previously did before I was assigned to Core-Min-Oil. [627]

Q. And that field work had nothing whatsoever to do with core-making or the core-making industry; is that correct?

A. You mean that change had nothing to do with it?

Q. Yes, I mean it did not take you into the core field at all?

A. I don't think any particular reason was ever given as to why I was changed. In other words, the

Plaintiff's Exhibit No. 37—(Continued)

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work that I had been doing had not been done by anybody in the interim, and the construction season was well advanced, and being an engineer, my work was logically along those lines that I was originally hired for, and I presume that Mr. McSwain wanted me to pick up my work, and consequently reassigned me. I never did ask him.

Q. The new work that you went to had nothing to do with core-making, if I understand you; is that correct? A. After mid-June?

Q. Yes.

A. No, nothing whatever. I only heard of it from time to time when I would be back in the City, or something of that sort, but never anything in a chronological order, or in detail.

Q. What was the nature of your inquiries when you were back in the City with reference to Core-Min-Oil? Just curious to know how the product was coming along?

A. Oh, casual inquiry was all. The field is far-removed from the orbit in which I usually move, and as a consequence it would be a case, as I say, of just passing interest and information, because I was doing directly something else.

Q. If I get the picture, then, you were almost exclusively—I guess we can say “exclusively”—devoted to the product of Core-Min-Oil for a period of virtually six months?

A. No, not that long.

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(Deposition of Arthur C. Waller.)

Q. Up to mid-June?

A. I would say it would probably encom- [628]
pass about February, March, April, May, and may-
be half of June; I don't remember the exact date.

Q. From approximately the time that the work
was transferred to the Vulcan Foundry from the
Macauley Foundry until you were reassigned to
your old engineering work?

A. That is correct.

Q. I am just trying to get the picture.

A. That is right.

Q. And that is what I understand from what
you have indicated.

A. That is right. I want to assist you.

Q. Now, Mr. Waller, what more can you tell us
in the general narrative of the work that was being
done with Core-Min-Oil, with particular reference
to getting it into the production phase in the found-
ry during the period you worked with it?

A. I don't know that there was anything more.
We had the responsibility of trying to correlate the
foundry procedure with the product that we were
interested in. And I think I have told you, while
not in detail, but in general, as I understand you
want it, what our work consisted of, and what our
aims were. The only other part of the procedure
might be the fact that the Shell Development Com-
pany at Emeryville undertook to look into the mat-
ter of Core-Min-Oil from a commercial standpoint,

Plaintiff's Exhibit No. 37—(Continued)
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and I am not a chemist, so I wasn't definitely assigned to that.

Q. That work was done at Emeryville in the laboratory and not under your direction; is that correct? A. That is right, at Emeryville.

Q. You were present, I suppose, at general conferences where men from the Emeryville laboratory reported on their work?

A. No, I wouldn't say that I ever attended a conference that they reported on it.

Q. Did you ever discuss Core-Min-Oil with Dr. Wright? A. No. [629]

Q. Do you know Dr. Wright?

A. I don't know Dr. Wright.

Q. Did you ever discuss it with any of the men at Emeryville? A. Yes, with Dr. Tuemmler.

Q. Tell us about that, and particularly when the discussion occurred.

A. I believe it was about the early part of June, possibly a few days one way or the other; and Dr. Tuemmler, whom I was talking to at Emeryville, asked me some questions about Core-Min-Oil, and how we used it, and how it was mixed. And he already had samples of it. And in order to familiarize himself with what I knew, he rather generally asked the questions relating to procedure and operation in the foundry.

Q. Where did this discussion take place? In San Francisco? A. At Emeryville.

Q. At his office in Emeryville?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. At his office in Emeryville. That is the only place I have ever talked to Dr. Tuemmler.

Q. No one else was present, I take it?

A. There may have been somebody in the office, a stenographer or not; I couldn't say.

Q. You don't remember anyone?

A. But other than that, no companion of mine.

Q. No one else was in the conversation as such?

A. No, I don't recall that there were.

Q. You have given us a general synopsis, as I understand it, of the developments relating to Core-Min-Oil as you observed them during the period from your first contact with Core-Min-Oil in early January, 1938 to the time that you were taken off that work and assigned to something else about mid-June of the same year?

A. I have tried to give you that.

Q. Can you give us anything more definite with reference to what the general conclusions were as to the product—conclusions [630] which you drew as to its utility?

A. My conclusions?

Q. Yes, your conclusions.

A. Not anybody else's?

Q. Just what you, being exposed to the product and working with it as you did, what your conclusions were, or reactions.

A. In general, I would say that the impression was gradually forced upon me that we had more and more difficulties facing us, as far as the successful sale or incorporation of our product emul-

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

sified asphalt was concerned as a component part of Core-Min-Oil than we had originally any idea of. These impressions came gradually, due largely to our experiments, the experiments of others, and, finally, in conversation with Dr. Tuemmler it developed that he felt that the solution did not contribute anything particularly to the making of a core; and in support of that told me that he would make up a variety of solutions and let me try them out to see if they would make cores in the foundry.

Q. Cores equal in every respect to cores made with Core-Min-Oil—is that what he said?

A. That is correct. In other words, he figured that, and conveyed the idea to me, that solutions could be made up which in no wise had anything to do with Mr. Ruddie's Solution as far as being parallel or the same thing, that would do the same work. And he gave me a few days later seven gallon cans, as I recall——

Q. Seven one-gallon cans?

A. Seven one-gallon cans marked from 1 to 7, and one of them, he said, contained the Ruddie Solution, though which one I didn't know. And I took these to the Vulcan Foundry——

Q. Did he state what the other cans contained, by the way?

A. I didn't understand that. One of the other cans?

Q. No, all of them.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. No. I took the seven cans that he [631] gave me, and that was all.

Q. I don't think you got my question. Did he tell you what was in each of the other six cans?

A. He told me there were solutions in there that he wanted me to try out to see if I could make cores from.

Q. But he did not tell you what those solutions were? A. No, never did.

Q. They were just numbers to you?

A. They were just cans full of liquid to me.

Q. With numbers on them?

A. That is all, with numbers on them. And I took these to the Vulcan Foundry, and these notes which were referred to earlier in the conversation, here, are the notes taken by me at that time in the making of cores with all seven different solutions.

Q. You have indicated the notes which we have identified as Waller Exhibit 1; is that correct?

A. Identify them as how?

Q. Waller Exhibit 1? A. Oh, I see.

Q. That is our technical definition. If I refer to Waller Exhibit 1, I will be referring to those notes. A. I see.

Q. When you refer to them I wish you would refer to them as Exhibit 1, and it will simplify our record a little bit. A. All right.

Q. These notes that you have presented as Exhibit 1, here, represent the story of findings made

Plaintiff's Exhibit No. 37—(Continued)
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by the utilization of each of these seven products, whatever they may have been, in the making of cores; is that correct?

A. They represent my observation in the incorporation of each of these liquids to sand at the Vulcan Foundry, from which the operator later made cores.

Q. You don't know which one of these seven is Core-Min-Oil; [632] is that right?

A. I never knew at the time.

Q. Do you know now? A. I know now.

Q. Which one?

A. The last-mentioned, No. 7.

Q. Is there anything on those notes indicating that No. 7 is Core-Min-Oil (handing papers to witness)?

A. No, there is nothing whatever in the notes that indicates what any of them are.

Q. You say that you know No. 7 is now. How do you know that?

A. Well, reference to the file shows Dr. Tuemmler's interpretation. In other words, he notes what they were; he made a record it, and I have since seen his record.

Q. You reported back to Dr. Tuemmler on your tests with these seven products; is that correct?

A. I made a report which possibly got to Dr. Tuemmler, though I did not make it directly to him. I reported to Mr. McSwain.

Q. In writing?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Yes, typewritten. I made a report at the time after the carrying out of these tests.

Q. Later you saw Dr. Tuemmler's reports as to what those seven products comprised; is that correct? A. Oh, a long time after.

Q. When did you see that report?

A. Oh, I saw that report about 1939—along in there somewheres.

Q. Do you remember when in 1939?

A. At the time we had a conference here at San Francisco, where—I think it was January, 1939, if I am not mistaken; I was present at that time.

Q. January? A. I think it was January.

Q. What was the occasion of that conference?

A. Well, the Asphalt Department called all their men in from various parts of the Coast, and it was purely a conference of representatives in connection with sales, ways and means of marketing, and new specifications, and work of that sort, like any other conference that might be called by a company. [633]

Q. In other words, it was a general annual sales conference, is that right?

A. That is right.

Q. You hold that conference every year, do you?

A. No, they are irregular. There was one this year, but there was none last year.

Q. Presided over by Mr. McSwain, I assume?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. That is right.

Q. Did Core-Min-Oil come up for discussion in that conference?

A. Oh, no, there was nobody else had any connection with it, as far as our organization was concerned, so there was no connection, whatever.

Q. I am going to ask you to mark in ink—and I am handing you a pen—the name “Core-Min-Oil” on the seventh page of your notes, Waller Exhibit 1. [634]

Q. You stated that you made the determination that No. 7 was Core-Min-Oil, and if I understood you you stated that you gained that from some report which you observed made by Dr. Tuemmler.

A. I don't think that you undersand me correctly.

Q. I would like to have a clear understanding on that, please, Mr. Waller.

A. I made no determination at all; I simply saw a report which had to do with the numbers 1 to 7 solutions, and from that I found out which was which.

Q. When did you determine that fact?

A. When?

Q. Observe that report, yes.

A. I said about January, 1939.

Q. It wasn't until that date; is that right?

A. No.

Q. How did you happen to look at that report at the time? Was it shown to you by someone?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. No, I think I asked—the question had never been settled in my mind, and I had performed these tests and never knew.

Q. Your curiosity had been aroused and never been satisfied; is that it? A. Probably.

Q. You note the date of those notes, Waller Exhibit 1, is June 10, 1938. Is that just before you were assigned to other work?

A. Oh, yes, that was one of the last assigned operations, if not the last, that I recall undertaking in the working with Mr. Ruddle, and Spotswood, and others in connection with Core-Min-Oil. [635]

Q. When we adjourned for a noon recess, Mr. Waller, we were talking about the seven samples which were given to you by Dr. Tuemmler and which were prepared into cores at the Vulcan Foundry; is that correct? A. Yes.

Q. Were those cores used for castings, if you know? A. I don't remember.

Q. Did you learn the formulation of any of those seven products that Dr. Tuemmler gave you other than Core-Min-Oil? A. No, I did not.

Q. Neither at the time nor in 1939 when you looked up the record?

A. Neither then nor later.

Q. Do you know the formulas of those products now? A. No, I do not.

Q. Have you ever seen any report in which those formulas are set forth?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. Only a report I referred to this morning.

Q. The one which you observed in 1939?

A. That is correct.

Q. That report was in Mr. McSwain's files, was it?

A. I couldn't say whose files it was.

Q. Where was the report?

A. At the Shell office. Whose files it was I don't know.

Q. How did you get hold of the report? What procedure did you go through?

A. I probably asked what the outcome of the matter was.

Q. Who did you ask? Mr. McSwain?

A. I don't recall.

Q. Did you have any other contact with the subject of [636] Core-Min-Oil at all other than the period prior to your being reassigned in mid-June to another task and this brief occurrence in January 1939 that you have testified about?

A. I wasn't definitely assigned to any work in that period, although conversation undoubtedly was indulged in with others as to the progress of the experimentation.

Q. Do you have any recollection of those conversations?

A. No.

Q. In the course of your work in connection with Core-Min-Oil did you make any study of a possible market for the product?

A. No, I never made any study for a market.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Was any study made with which you are familiar? A. Not to my knowledge.

Q. You have no indication of anybody in connection with the Shell Company attempting to study the potential market for Core-Min-Oil?

A. I was not identified with it.

Q. Was such a study made?

A. If there was any, I wasn't identified or I don't know of any.

Q. You mean by that you don't know of any such study; is that it?

A. I don't know of any study being made.

Q. And you have never seen any report relating to such a subject; is that correct?

A. I have never seen any report relating to it.

Q. Do you know of any attempts which were made to market Core-Min-Oil at any time?

A. No, I don't.

Q. You were never instructed to put the product on the market, were you? A. No.

Q. Never instructed to attempt to find a customer or customers for Core-Min-Oil?

A. No.

Q. At the time you completed your work with Core-Min-Oil in mid-June 1938, what would you say was the general status of the [637] studies of the product and the conclusions which were drawn by you with reference to it?

A. Whatever answers I could make to that would only be my own conclusions.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. That is what I am asking for. You were assigned exclusively to that work at the time, and I would like to know what you concluded at the close of your assignment.

A. Well, my personal conclusion was that we had encountered far more difficulties than we had anticipated, and that as far as my activity was concerned, the matter had a bigger horizon in difficulties than I had anticipated.

Q. Let us take that up specifically. As I remember your testimony, the first problem which was encountered was the one Mr. Ruddle told you about at the very start, namely, that certain cores under apparently the same conditions were soft, while others were firm? A. That is correct.

Q. That difficulty was overcome by the recognition of the source of the softening, namely CO₂ gas from the direct fire; is that correct?

A. Yes.

Q. And it was determined then that in order to overcome that difficulty all you had to do was prevent CO₂ gas from getting at the core during baking; that is correct, isn't it?

A. That was our idea at that time.

Q. What other difficulties do you have reference to that were encountered during the course of your association with Core-Min-Oil?

A. The impossibility of making the binding ingredients up in a single solution or a single combination.

Plaintiff's Exhibit No. 37—(Continued)
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Q. Tell us just what you mean by that.

A. At each instance when the binding ingredient which included Core-Min-Oil, sand, et cetera, for cores was made up, individually the component parts were proportioned and added separately [638] to the sand.

Q. If I understand you now—and we will refer to Waller Exhibit 1 and the formula on the reverse side of the first page—as a matter of procedure, when you came to make up a core mix, you took sand and first you added your solution in the number of parts required for the formula?

A. That is right.

Q. Dependent on the amount of sand present, of course? A. That is right.

Q. And then you added separately as the next step, or another step, the asphalt emulsion; is that correct? A. That is right.

Q. So you had two steps to follow to prepare a core mix with Core-Min-Oil; is that correct?

A. Allowing the sand as constant, that is correct.

Q. Yes, assuming the sand to be constant. We have to make that as an assumption, don't we?

A. Yes.

Q. Now, Mr. Waller, did it make any difference whether you added the solution first and the asphalt emulsion second, or vice versa?

A. I couldn't say.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. Do you have a note that it was done both ways?

A. I don't recall any instance where it was done—the procedure was altered.

Q. The procedure was always first add the solution and then add the asphalt emulsion?

A. I refer to this Exhibit 1——

Q. Waller Exhibit 1?

A. Exhibit 1, under the heading of "Procedure": "Sand measured. Solution added and hand mixed. Emulsion added and hand mixed and riddled."

Q. What does riddled mean?

A. Riddled—there is a box in foundry procedure which has a wire mesh bottom with about a four-inch-square edge, and in order to achieve a mixture, sand is shaken through this riddle, and that is called [639] riddled sand.

Q. The device is called a riddle, is it, that you have described?

A. To the best of my recollection, riddle is correct.

Q. What is the purpose of doing that? To make a homogenous mix of sand and oil and solution?

A. To disperse ingredients evenly throughout the sand.

Q. So that you have a mix of even texture with reference to all ingredients; is that correct?

A. That is right.

Q. Did you ever prepare a core mix using the

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

solution and asphalt emulsion as a single liquid?

A. No.

Q. You never saw asphalt emulsion and the solution first mixed one with the other and then mixed with the sand? A. No.

Q. Do you know of any attempts that were made to do that? A. No, I don't.

Q. Now, just what do you mean with reference to this single combination? You said that a difficulty was that the product could not be used as a single combination. Did you mean that Core-Min-Oil was in fact two separate liquids and could not be made into a single liquid? I am trying to understand what you meant, in other words.

A. That is in general what I meant—the fact that you had to have two separate operations in order to get your complete binding ingredient with the sand, as opposed to a single admixture of linseed oil to sand in regular foundry procedure.

Q. You are familiar with the fact that in regular foundry procedure it is customary to add progressively several different ingredients to a core mix, are you not? A. I don't remember.

Q. Other than the fact that the foundry man, or core maker, whatever he is called, who mixes the sand and these ingredients, [640] had to make two steps in his mixing operation, what objection is there to the fact that the products are separate one from the other, the solution and the asphalt emulsion?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. The core maker, as far as my observation went in the Vulcan Foundry, never mixed linseed oil and sand under any circumstances. It was brought to him in a mixed condition.

Q. Mixed at some remote point?

A. It was brought by the mixing man from the mixing device and placed at his disposal on the bench where he could get it.

Q. I think possibly my question wasn't clear there. What do you call the man in the plant who mixes the sand and core oil, whoever he may be?

A. I don't know what his correct title is; I would call him the mixer man.

Q. Let us call him the mixer man, then. Now, other than the fact that the mixer man, as you have termed him, had to put in the solution and the asphalt emulsion in separate steps intermediate of the second of which he went through a mixing process according to the procedure illustrated on Exhibit 1, what objection was there to having the product in two parts, the solution as one part and the emulsion as another?

A. It would have to be sold and marketed packaged separately.

Q. What objection is that? I don't understand, in other words.

Q. You have double everything. Instead of a single container, you have two. You have double handling. You have pyramided the factor by a hundred per cent; you have doubled something.

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

Q. You haven't doubled your total volume of your product?

A. It isn't the total volume. You have packaged the total volume two ways. You have split it. Therefore, it would have to be—as far as known at that time, mixed in that way would make two operations instead of one. [641]

Q. When the product was presented to the Shell Oil Company by Mr. Ruddle in January 1938 it was in that form in two packages, wasn't it?

A. Yes.

Q. Did Mr. Ruddle ever show you any method of packing it in one container? A. No.

Q. So that the two could be sold together?

A. Not to my knowledge.

Q. That was a problem which you, the Shell Oil Company, considered to be present and which you felt was an objection; is that right?

A. It was a marketing feature; it was something that had to be considered in the potential placement of the product.

Q. If I understand the situation correctly, Mr. Waller, what that meant was that a foundry man going to buy Core-Min-Oil would buy two separate lots of product, one the solution and the other asphalt emulsion, is that correct?

A. That is correct.

Q. And then would use them in accordance with whatever formula was prescribed, drawing from

Plaintiff's Exhibit No. 37—(Continued)
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one container for the solution and from another container for the emulsion; is that correct?

A. That would have been the procedure at that time as far as we knew.

Q. Now, other than the fact that you would have to ship the product, we will say a tank car of solution and a tank car of asphalt emulsion and thereby have two tank cars, what would be the objection to that procedure, either from the standpoint of the seller or the standpoint of the buyer? I would like to find out.

A. In any operation of manufacturing it is desirable to eliminate all movement and necessary manipulation to a minimum. Another point: If these two were to be handled separately there would be no assurance that our emulsion would [642] necessarily be used.

Q. In other words, while you might sell the solution, the foundry man might buy Standard Oil's asphalt emulsion instead of Shell; is that correct?

A. That would have been a possibility.

Q. And you weren't interested in building up a market for Standard Oil or Union or somebody else, were you? A. No.

Q. Now, you mentioned the fact that it is always desirable to reduce the number of operating steps in the manufacture of a product. If I understand you, by that you mean that it is desirable, if you have a five-step process, to reduce it, if you can, to a three-step process?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. I would say so.

Q. And if you have a three-step process, it is desirable, if you can, to reduce it to a two-step process? A. That is right.

Q. But that has nothing to do with the usefulness of the ultimate product, does it?

A. Only so far as the costs incurred in the duplication of handling affect the economics of its utility.

Q. Now, let's take up that point; it may be a little out of order in our general continuity here. Did you make any study of the cost of production of Core-Min-Oil? A. No.

Q. Did you make any study of the cost of competitive products such as linseed oil?

A. We knew what linseed oil was costing, what the market was.

Q. What was the approximate market price?

A. I can't remember at this time.

Q. What was it compared to the cost of asphalt emulsion in broad terms?

A. Asphalt emulsion by itself?

Q. Yes.

A. It was considerably greater, but how much I couldn't say.

Q. Let's see if we can work this out another way. Is the asphalt emulsion sold by the tank car or by the barrel or what? [643]

A. It is sold by the barrel or by the tank car, either one.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. In 1938—let's say in January 1938; you are familiar with the asphalt market, that is one sure thing—what was the price in tank car lots of asphalt emulsion? A. I couldn't tell you.

Q. Can you approximate it at a per gallon price?

A. It could be very easily verified, but I couldn't tell you at the present time what it was.

Q. Well, could you give it to me within a certain range?

A. No, the price fluctuated quite a little. It has fluctuated for some time. One month's price might be different from another's.

Q. What is the price today?

A. Where? At the point of manufacture?

Q. In San Francisco. Right here in San Francisco. A. Of what grade asphalt emulsion?

Q. I don't know anything about asphalt emulsion. I will have to put myself right in your hands. The type of asphalt emulsion, Y-104, that was used in this product Core-Min-Oil.

A. I don't know definitely the price, but if you want me to guess, I would say it is in the neighborhood of seven cents a gallon in carload lots.

Q. And in fifty-gallon drums?

A. It would be considerably higher.

Q. Eight or nine?

A. Probably around ten or eleven.

Q. And in January 1938 the price scale was running a little lower than it is today, wasn't it?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. It might have been; I don't know. Sales volumes are not my particular responsibilities.

Q. Your problem is more an engineering problem? [644]

A. Engineering in the field.

Q. You are generally familiar with the fact that asphalt emulsion of the class of Y-104 sells in the neighborhood of seven cents a gallon in carload lots, maybe up a little bit at one time, maybe off just a trifle at another, but it is in that general neighborhood; is that correct?

A. Yes, that is correct.

Q. Do you have any idea, or do you know anything about the price of linseed oil in tank car lots in January 1938?

A. No, I have no recollection of it.

Q. Have you ever had any idea what the price of linseed oil was in tank car lots or otherwise?

A. Yes, I did know in 1938, because I bought a gallon or two; but I don't remember now what I paid for it.

Q. You paid probably \$1.05 or \$1.08, something like that, didn't you?

A. I don't remember.

Q. I don't know whether it is testimony or not, but I am in the paint manufacturing business and buy linseed oil all the time in tank car lots. I am like Mr. Waller, I can go and find out and tell you just what the price was.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Have you ever made any calculation of the price of the solution which went to make up Core-Min-Oil? A. Never knew.

Q. The largest part of that solution was sodium silicate; isn't that true?

A. That is my understanding.

Q. Something more than ninety per cent by volume?

A. I don't know the proportions.

Q. A very large part, however?

A. Yes, I understand that is right.

Q. Do you know what the price of sodium silicate is? A. No, I don't. [645]

Q. Have you ever known, say in tank car lots?

A. No.

Q. Don't know the approximate price?

A. No, I don't.

Q. It is a matter of just a few cents a gallon, isn't it?

A. That I couldn't say if I don't know.

Q. I thought possibly you have a broad idea without knowing the definite figure.

A. No, I do not.

Q. I am not trying to hold you to any exact figures, Mr. Waller; you are qualifying your statements on those things perfectly properly. All I am interested in is in getting a general picture of some of these things. Although your information might not be accurate, but you know a lot closer than I do, and I would like you to give me what you can.

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

A. I am perfectly willing to give you anything I know, but what I don't know I don't want to guess at.

Q. Naturally, I don't want you to. Did you ever make any calculation to determine what the cost of preparation of a core mix with Core-Min-Oil was in contrast or comparison with the cost of preparation of a like amount of core mix with linseed oil,—that is, assuming that we are following the procedure in making a Core-Min-Oil core mix as illustrated in Waller Exhibit 1, and in preparing a linseed oil core mix there is merely the addition of linseed oil to core-making sand.

A. I never made any such calculation.

Q. Do you know if one was ever made for the company? A. No, I don't.

Q. Why do you say that it would cost more to make a Core-Min-Oil core mix than a linseed oil core mix? Merely because there are two steps in the Core-Min-Oil core mix manufacture?

A. Two operations against one would automatically increase the time element. [646]

Q. You are sure of that? A. Yes.

Q. It is true that if you take just exactly as long in mixing the solution as in mixing in linseed and in mixing in the asphalt emulsion as in mixing in linseed, it would take twice as much time to make the Core-Min-Oil mix as the linseed oil core mix. But do you know of your own knowledge that it is necessary in order to make a Core-Min-Oil core mix

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

that you must mix each step as long as the linseed oil step?

A. I don't know what you mean by linseed emulsion mix.

Q. I did not say "emulsion" there. There was no word "emulsion" in there.

A. What did you combine with linseed oil there?

Q. Sand. I will go at it this way—possibly I can simplify it: If I understood your testimony, you never timed the length of time which it took to mix the solution with sand in proper fashion.

A. No.

Q. And you never timed the length of time it took to mix the asphalt emulsion with sand.

A. No.

Q. As a matter of fact, you never timed the length of time that it took to make the linseed oil core mix? A. No.

Q. Therefore, it is only speculation on your part that it takes longer to make a Core-Min-Oil mix than a linseed oil core mix; isn't that true?

A. I wouldn't call it speculation.

Q. I am trying to get some foundation for your statement. I haven't been able to get one. Maybe you can give it to me.

A. If you lift this and put it over here, that takes some time (indicating ashtray). If you lift it and put it over twice, it takes twice as much time.

Q. Unless you move twice as fast.

A. Unless you compensate.

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Q. I will put it this way: Mr. Waller, I don't mean to be [647] argumentative with you here, but you have made a statement which I can't follow. You may be entirely correct, but I have not been able to find any foundation for it in your knowledge yet. Now, I want you to straighten me out if I am wrong. Do you know of your own knowledge as a matter of fact that it takes any longer to make a Core-Min-Oil core mix than a linseed oil core mix—now, of your own knowledge.

A. No, I don't.

Q. What other— A. May I explain it?

Q. Yes, you may. If you have something you would like to add, you go right ahead.

A. I would like to add the fact that, based on our experience, the way in which we were forced to mix the ingredients, it unquestionably was a longer process the way we had to do it than the way it was done in large quantities in the Vulcan Foundry with linseed.

Q. What was that attributable to, if you know?

A. One was a well-founded, thoroughly understood procedure of regulation routine. The other came under the head of experiment. The facilities were not available for our particular purpose, but they were built in primarily for the purpose of facilitating the linseed core sand mix.

Q. In other words, the linseed mix was being prepared under conditions which were the product of long experiment, long usage, and under ideal conditions substantially?

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

A. That is exactly correct.

Q. And the mixing of Core-Min-Oil core sand was under conditions that were very new to you and without the benefit of all the refinements and apparatus that you might otherwise develop?

A. Yes.

Q. Is that right? A. Yes.

Q. There was opportunity, in other words, for progress in [648] simplification and refinement of methods of mixing Core-Min-Oil core sand?

A. There was nothing there to facilitate it, no.

Q. But there was plenty of opportunity in point of time, as you learned more about it, for a movement toward simplification; isn't that correct?

A. No, we couldn't alter procedure in a foundry that was doing contract work to suit ourselves; we had to fit in.

Q. I understand. I don't think you understood my question. I merely meant by that this: You were mixing Core-Min-Oil core sand under comparatively adverse conditions? A. Yes.

Q. And as those conditions improved, the mixing process might be improved and simplified and facilitated; isn't that true?

A. It was possible, yes.

Q. Now, what other difficulties did you encounter in connection with Core-Min-Oil? You have named the CO₂ gas, the solution of which you have described. You have mentioned the fact that the

Plaintiff's Exhibit No. 37—(Continued)

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product could not be sold in a single package. What other things do you have in mind?

A. It had a tendency to stick.

Q. Stick where and how?

A. In the core box.

Q. That was a tendency, you say?

A. It had a tendency to stick. By that I mean that not in all cases did it stick, but in some cases it stuck.

Q. What percentage of time did sticking occur, if you remember?

A. I would have reference to Exhibit 1 as my notes on the various solutions there.

Q. Now turn to the seventh test, which you said this morning was the Core-Min-Oil test. As I read that report, I understand that in the first attempt to carry out that test, some sticking occurred and those cores were thrown out and you started over [649] again,—that sticking having occurred not because of anything to do with Core-Min-Oil, but, as your notes say, the sticking occurred due to the fact that there was some condition in the core box carrying over from previous cores; is that correct?

A. No, the reason of sticking was due to adherence to the core box; but if it did not stick with the linseed, then the core box could be used indefinitely, but it did stick with this.

Q. Now, if I can read your writing here, it says here that, "Cores first and second Lac good looking cores. Workability, color, etc., similar. Core stuck

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

on 2nd after powd." Will you explain just what you meant by this language in the first four lines?

A. Yes. The first and second cores had Lac-podium put in the core box.

Q. What is that, please?

A. It is a vegetable powder that is shaken out through the meshes of a sack which has a tendency to dust the inside of the core boxes.

Q. Like you would put flour in a baking tin when you are going to make muffins?

A. That is a good simile. "Workability, color, etc., similar."

Q. You skipped one line: "Good looking cores." What does that mean?

A. Good looking cores.

Q. It means just what it says, I suppose?

A. From visual inspection they were good looking cores. "Workability, color, etc., similar." Do you want—

Q. Similar to what? A. To each other.

Q. They both appeared to be equally workable and of the same color; is that right?

A. That is right.

Q. All right; continue.

A. "Core stuck on the second after powdering." That means that the second core stuck after powdering; cores first and two were powdered. The cores stuck [650] on the second after powdering.

Q. Now, let me understand that, Mr. Waller. You

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

say here in the first two lines that the first and second cores were good looking cores. A. Yes.

Q. And if I understand the fourth line of this note, it is that the second core stuck.

A. "Core stuck on second after powdering."

Q. Stuck on second what? Is that the second core or the second make of cores?

A. I would say that means on the second attempt after it was powdered.

Q. When you were making up these cores, Mr. Waller, did you make up a given number of cores, say eight cores or ten cores in one group?

A. Sometimes we did and sometimes we didn't.

Q. What I am trying to get at, could this mean that you made a second batch of cores that stuck?

A. No, that doesn't mean a second batch; that means the second core.

Q. In number, not the series?

A. That is right.

Q. Is that the same core as is referred to as the second core in the first line of your note?

A. No, I don't think it does: "Core stuck on second after powder."

Q. Can you explain that?

A. There was unquestionably a sticking there after the second core was made.

Q. In other words, the third core stuck?

A. No, I would say after the second was made. The first core—the first and second they used Lacpodium, and the workability, color, etcetera, was

Plaintiff's Exhibit No. 37—(Continued)
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similar, and the core stuck on the second after powdering—that is the second core.

Q. Mr. Waller, will you look at this memorandum that I hand you and see if you can identify it—a typewritten memorandum (handing paper to witness).

A. Yes, that is my report. [651]

Q. When was this report prepared that you have just handed to me? A. When was it made?

Q. Yes.

A. June—June 10—probably June 11.

Q. Does it have——

A. Referring to these notes here which were put in a report from me.

Q. You mean referring to Waller Exhibit 1?

A. Exhibit 1, dated June 10.

Q. Do I understand that you dictated the memorandum which you have just handed to me from the notes Waller Exhibit 1?

A. I don't know whether I dictated it or whether I wrote it.

Q. You prepared it?

A. I was responsible for it.

Q. You will notice that the language of the report which you have handed to me is somewhat different, at least in some respects, than the language of the corresponding items on Waller Exhibit 1.

A. That is right; but anybody who makes notes has the privilege of interpreting those notes in their

Plaintiff's Exhibit No. 37—(Continued)

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formal report. This was for my guidance (indicating) in making this (indicating).

Q. That is what I understand, and that is what I would assume. I couldn't understand, though, whether you were telling me that this was and purported to be a copy of Waller Exhibit 1 or not, I couldn't conceive of that being true.

A. I don't think I said that.

Q. Well, I couldn't tell from your statement. I assume that it is not correct.

Mr. Hackley: I offer the notes identified by the witness as having been prepared by him using as a foundation Waller Exhibit 1, as Waller Exhibit 2.

(The document was marked "Waller Exhibit No. 2.")

Mr. Hackley: Q. Will you note before we go any further on [653] this matter, that in the second paragraph under "Procedure" there is a change in the typewriting. The emulsified asphalt which is referred to as twenty-five per cent with a penciled period, has been modified so that it reads 2.5 per cent, to correspond with Waller Exhibit 1 on the same item.

A. Yes, I noticed that. And this is obviously a typographical error.

Q. I would assume so. The correct figure is the penciled notation 2.5 per cent on Waller Exhibit 2?

A. That is correct.

Q. We will therefore regard 2.5 per cent as the correct figure throughout our examination. Now,

Plaintiff's Exhibit No. 37—(Continued)
(Deposition of Arthur C. Waller.)

Mr. Waller, with reference to the question of core sticking and identifying the cores that did or did not stick, will you examine your discussion in the notes in Waller Exhibit 2 of solution No. 7 and see if that helps to identify what you meant when you said, "Core stuck on second after powdering," in the fourth line of Waller Exhibit 1.

A. What do you want me to do?

Q. Can you tell from Waller Exhibit 2 which core stuck?

A. I don't understand your question.

Q. Well, I would like to know if any of the cores made with Core-Min-Oil, which I understand was used to perform the seventh of these tests referred to in Waller Exhibits 1 and 2, stuck in the core box.

A. This is what happened: The core stuck after the second had been made.

Q. Which core? A. Which core?

Q. Yes. You made a number of cores. Now, which ones stuck?

A. After the second had been made. It would be the core after the second had been made.

Q. That would be the third core? A. Yes.

Q. How about the fourth or the fifth? [653]

A. Third, fourth, fifth, sixth, seventh and eighth stuck.

Q. You referred in doing that to Waller Exhibit 1 and your penciled notes, but I note that in referring to 3, 4, 5, 6 and 7, you have the numerals "o.k."

Plaintiff's Exhibit No. 37—(Continued)

(Deposition of Arthur C. Waller.)

A. Excuse, me. Excuse me; that has got a bracket in there, "o.k." I didn't notice that. The eighth stuck.

Q. I will tell you this, Mr. Waller: In reading that without knowing what you meant, it was my understanding from those notes that the eighth core stuck; at least, that was my conclusion. Is that correct?

A. Yes, the eighth core stuck. It definitely says so.

Q. Then, are we to conclude—and I assume this may be correct—in Waller Exhibit 2 where you say, "Core stuck in cope on 6th made," that this "6th" should be "8th" and is a typographical error? I might say your counsel and I have discussed that possibility and it appears to us to be possible that that is true.

A. In the face of this, I would say that it is a typographical error.

Mr. Hackley: I suggest that we note a correction on there, to simplify this record, Mr. Aurich.

Mr. Aurich: That is satisfactory to me.

Mr. Hackley: Q. Will you change that "6" to "8," Mr. Waller?

A. (The witness wrote upon the exhibit.)

Mr. Hackley: We will draw a line through the 6. I have changed that to read "8th" underneath instead of "6th" on top, Mr. Waller.

A. That is right.

Plaintiff's Exhibit No. 37—(Continued)
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Q. That is in Waller Exhibit 2, the second line referring to solution No. 7? A. That is right.

Q. Did more than one core stick out of those eight cores? You [654] can examine both sets of notes, Exhibit 1 and Exhibit 2, for that purpose. I am not trying to trap you, Mr. Waller; I am trying to get these facts. Notes are cryptic, as you know.

A. Yes, there were two cores that stuck.

Q. What was the other one that stuck? The eighth core stuck. What other one stuck, Mr. Waller?

A. "Core stuck after second had been made."

Q. What one after the second stuck? The third?

A. No, we threw that one out.

Q. The whole core?

A. Yes, you can't make a casting out of a damaged core. That was thrown out.

Q. But that core that you threw out stuck, as you state in this note here, "Due to dried material from previous cores."

A. That is the notation. That is correct.

Q. That is correct. Do I understand from that that there were some remains of previous cores in the core box?

A. A little gummy sand nearly always remains in the core box; you can't get it theoretically polished.

Q. And you attributed, I would assume from your report there, the sticking of the cores after the

Plaintiff's Exhibit No. 37—(Continued)

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second in the first batch to the presence of those foreign materials in the core box?

A. That was my notation at the time.

Q. That is the correct interpretation of it, is it, Mr. Waller? A. That is right.

Q. But out of the cores made with clean core boxes, only one stuck, and that was core No. 8; is that correct?

A. No core stuck after the second had been made. It was thrown away.

Q. You threw the whole batch out then?

A. No, we threw that core out. [655]

Q. That one core? A. Yes.

Q. And went ahead with the core box and made up an additional number to a total of eight?

A. We continued on and made up an additional number. That one was thrown out that stuck. Any that stuck were no good to us. Therefore, they were thrown out and we noted the number in sequence in which it was in the notation.

Q. Then you made really nine cores in all, is that correct, in test No. 7?

A. If that is what the Exhibit 1 says, that is what we did. I don't recall now.

Q. Will you examine Exhibit 1 and see?

A. No, eight cores were not made of each, according to these notes.

Q. How many cores were made in test No. 7?

A. Seven cores were kept.